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FEBRUARY
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

Small Animal Practice
By O. V. BRUMLEY

Sterility in Swine
By A. T. KINSLEY

Medication in Milk Fever
By J. F. DE VINE

The Teaching of Parasitology in Veterinary Colleges
By MAURICE C. HALL

The High-Grade Milk Industry
By E. MERILLAT

Ergotism
By L. H. PAMMEL

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VETERINARY MEDICINE

Published Monthly by the Veterinary Magazine Corporation, 4753 Grand Blvd., Chicago, Ill.
L. A. Merillat and D. M. Campbell, Editors; J. F. DeVine, A. T. Kinsley, A. Eichhorn, L. H. Pammel, C. A. Zell, M. C. Hall, E. L. Quitman, W. J. Martin and E. Merillat, Department Editors; H. B. McMeal, Business Manager; I. C. Brenner, Advertising Manager.
Entered as second-class matter, July 19, 1910, at Chicago, Ill., under Act of Congress of March 3, 1873.
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Veterinary Medicine

Vol. XVII FEBRUARY, 1922 Number 2

Editorial

THE FOUNDER OF VETERINARY EDUCATION IN ENGLAND

CHARLES VIAL DE SAINT-BEL, who was an instructor of anatomy at the veterinary school of Lyons during the first few years of its inauguration, is by right the founder of veterinary education in England, in fact the English-speaking world, although he was by birth and citizenship a Frenchman.

He was born in the neighborhood of Lyons in 1753 and was one of the first students of the college that was founded in that city in 1761 by Bourgelat. He is said to have been unpopular with his colleagues and is described by Bourgelat as having been somewhat of a trouble-maker.

In his own memoirs written in 1789 he relates that being disappointed in a promotion he had a right to expect, he migrated to England in disgust in 1788, where he immediately prepared plans for the opening of a veterinary college in London, but being a foreigner his propositions were not met with much favor immediately, in fact, not until 1790 when he had induced the Odiham society, which was then working on a plan to give public instruction in farriery, to change its name to "Veterinary College." Thus the foundation of the Royal Veterinary College that played such a significant role in veterinary education in the English speaking nations was laid down with Vial as its first executive.

His career as such was, however, short, having died of an eruptive fever in 1793.

CHARLES VIAL DE SAINT-BEL
1753-1793

While Vial was never a prominent character in veterinary education, he must nevertheless be credited with having left his native country with the premeditated purpose and determination to institute public veterinary instruction in England, and in this he succeeded.

The fact that he died within two years after having accomplished his purpose, very likely prevented him from having become more famous as an instructor and literateur. He, however, published a book entitled "Lectures on the Elementaries of Farriery and the Art of Horse Shoeing; and on the Diseases of the Foot," designed chiefly for the use of his pupils in the veterinary college he founded. The book was printed for the author in London, and is not a translation from the French.

THE PHENOMENA OF ANESTHESIA

THE strange fact that anesthesia destroys consciousness without obliterating the function of the vital centers located in the medulla oblongata has been a matter of constant controversy ever since inhalation anesthesia was first discovered. It is a phenomenon that is not easy to comprehend in view of its relative safety to life. Just how volatile chemicals can produce such a profound state of unconsciousness and insensibility in a few moments without materially affecting the vital functions and that will disappear quite as promptly when the administration is discontinued has been a mystery from the very first day of anesthesia by inhalation.

The theory of deficient oxygenation of the blood is no longer entertained, since it has been proved that anesthesia can be maintained when the oxygen saturation of the blood is complete. The theory of nerve-cell alteration will always be but a theory, because such an hypothesis is beyond the pale of experimental proof. The exponents of this theory have, however, attributed anesthesia to transient dehydration of the nerve-cell protoplasm of the cerebrum and compare the phenomena with that shown by certain dessicated infusoria which remain apparently dead when dry and then revive on being re-moistened. That is, in this hypothesis the content of the nerve cells of the cerebrum yields up moisture (or is in some way altered) as the anesthetic reaches the brain and then reabsorbs the loss from the intercellular spaces when it passes off. This theory would be splendidly beautiful if it did not lack proof.

More recently, anesthesia has been attributed to acidity of the blood. Crile, the exponent of this theory, has attempted to show that there is a close relation between acidity of the blood and the state of unconsciousness, not only in the unconsciousness produced by anesthetics but also in that caused by other conditions such as overwhelming emotion and excessive muscular effort. He explains that death itself and the unconscious state that precedes it may be nothing more than extreme acidity.

Just how the higher and the lower brain centers show opposing effects from the acidity is explained by the fact that inhaled anesthetics increase hematosis, the respiratory centers acting with increased vigor in proportion to the increased acidity, whereas the centers controlling the voluntary centers are inhibited. That is to say, acidity does not augment muscular activity, but all the while it is being combatted by an increased respiratory action, sufficient to maintain life. Hence the state of anesthesia is explained, in short, as a fight of the respiratory movements against a condition (the acidity) that is causing the unconsciousness.

Coming from such a profound student of anesthesia as Crile and confirmed by convincing experiments, it seems this simple hypothesis should supersede all former ones.

THE MEDICAL SERVICE OF AN ARMY IN THE FIELD

Colonel A. N. Stark, M. C., U. S. A., who as chief surgeon of the First Army, A. E. F., qualified himself as no living man in this country has ever before been able to qualify in the matter of making recommendations, publishes an article in The Military Surgeon that is likely to astonish anyone who has not had a similar experience with a headquarters preparing an army for action and to carry out extensive operations.

The complexity of the organization (of the medical service alone) is almost beyond comprehension. The wide range of scientifically trained chiefs of services required, the large officer and enlisted personnel needed and the magnitude of the plans and problems, are simply staggering to the uninitiated.

Col. Stark's recommendations in the matter of assistants alone will serve as a basis upon which to build an idea of the service an army surgeon must direct and keep running smoothly. The following are his assistants (chiefs of services):—

1. Sanitary Supervisor and Epidemiologist.
2. Director of Hospitals.
3. Director of Ambulances.
4. Surgical Chief.
5. Medical Chief.
6. Orthopedist.
7. Gas Officer.
8. Neuro-psychiatrist.
9. Urologist.
10. Personnel Officer.
11. Medical Supply Officer.
12. Laboratory Chief.
13. Dental Supervisor.
14. Veterinary Supervisor.
15. Contact Officer (with asst. Chief of Staff for supply).
16. Evacuating Officer (one for each corps sector).

By now stretching the imagination through three, four or five army corps each with its own headquarter's services and each commanding from four to six divisions of 25,000 men and 4,500 animals each, together with the motor service of the Medical Corps and available rail transportation, a glimpse of the trouble of an army surgeon may be obtained.

To illustrate the point, the veterinary service is but one of sixteen other important services required to keep a field army functioning properly. The fact that during the Argonne-Meuse operation the First Army had a total of 96,000 animals, of which 23,000 were evacuated and transported to veterinary hospitals previously prepared by the Service of Supplies, gives but a feeble impression of the big problems with which our capable chief Col. Stark was charged during this, the greatest battle in American history.

SOME SHATTERED HOPES

1. When diptheria antitoxin was discovered, and antitetanic serum soon after, it was thought that the cure of all infections was in sight; that the therapy of the future would depend simply upon the discovery of the causative microbe of each disease and the manufacture of an antitoxic serum that would surely cure.

2. When general anesthesia was discovered by Morton in 1846, it was thought that the living body could now be opened with impunity at the will and convenience of the surgeon, but infection stepped in and stayed the overzealous hand.

3. When Lister in the early 70's proved that infections could be prevented, the surgeon was led to believe that henceforth there would be no bounds to his ardor but shock intervened to curb his inclinations.

4. When tuberculin was discovered it was given a wide publicity as a cure for tuberculosis and some years elapsed before the mischievous announcement was shown to be premature.

5. Once the science of bacteriology began to disclose the role of pathogenic bacteria it was thought that therapeutics would soon simplify itself into the mere discovery of specific disinfectants. But the chemist like the bacteriologist has made but feeble progress in that direction. The harmless internal disinfectant is yet undiscovered, but this the internist hopes to realize.

6. Among the fallacies of the past the blunder bus prescription, as if imbued with the nine lives of the feline, seems to die hard, but faith in its merits is waning because the therapist no longer seeks fame in its mysteries.

A GOOD PLATFORM FOR A VETERINARY JOURNAL

1. Champion the cause of the practitioner against all harmful agencies.
2. Promote the welfare of the veterinary associations and encourage the organization of more of them.
3. Enlarge the realm of veterinary science.
4. Establish a loyal relation with the livestock interests.
5. Participate actively in the work of the Horse Association of North America.
6. Develop the breeding of pure-bred stock of all domestic species.
7. Initiate and endorse helpful legislation.
8. Increase the attendance of the veterinary schools.
9. Supply the veterinary news of the world.
10. Ameliorate the veterinary service of the war and agricultural departments and the status of their personnel.
11. Advertise the veterinary profession as a remunerative industry.
12. Advocate the eradication of tuberculosis, abortion disease and rabies from domestic animals.

THE FLAVINES

Although the flavines have been attracting a great deal of attention abroad for several years they are just coming into general use in this country. They are anilin derivatives possessing a microbicide power twenty times stronger than that of mercuric chlorid and without inflicting much injury to living tissues or retarding phagocytosis. They penetrate the tissues more than the common germicides and therefore do not produce the pellicle or wall behind which septic processes evolve unmolested. The veterinarian has his choice between acriflavine, flavisol (Zell), and proflavine (Abbott).

Chronic chloralism, a term preconized by Prof. Udriski, results when chloral hydrate is given in repeated doses. The disease is manifested by general paralysis, alopecia and pustular dermatitis.

Editor's Personal Page

To think is to succeed.

The new address of VETERINARY MEDICINE is No. 4753 Grand Boulevard, Chicago, Illinois.

"It is plain that if universal immunization of dogs was put into effect for two years the virus of rabies would vanish from the face of the earth."—Eichhorn.

Since veterinary education in the interest of progress has been gracefully turned over to a few state colleges, students should all be accepted on equal terms, regardless of their citizenship.

The slogan "Kill the dogs and send the food to the starving women and children" is a high sounding aphorism, but the average dog lives from the scraps of the table and pays mighty well for its board.

We are informed that the existing veterinary college can not legally covet influence beyond their lawful bornes and only to a limited extent within them. Just what will be the termination of such a situation is, to say the least, very problematical.

MISSOURI'S LOSS

After serving his state for more than 25 years as state veterinarian, Dr. D. F. Lucky of Jefferson City, Missouri, has resigned, according to press reports. The resignation was sent to the state board of agriculture to take effect December 1, 1921. The resignation comes as a big surprise alike to the layman and veterinarian since everyone knows what such a loss means to the cause of animal husbandry. The name of Lucky will live in our annals as the pioneer of the intradermal tuberculin test, but his colleagues who know him best will want to remember him as a relentless critic of everything that is bad and a tireless champion of everything good in live stock sanitation.

A high preliminary education will not make a veterinarian out of an ill taught student.

Foot and mouth disease does affect man after all. Does not the golf enthusiast "hoof all day and mouth all night?" Apology to Paz, Chicago Tribune.

After having attended all of the veterinary association meetings the practitioner may go home thankful that domestic animals are not susceptible to logorrhea.

When veterinary education was in the hands of the private schools it was, in effect, national in character. Now it is so strictly provincial that the veterinarians unfortunate enough to live in states where there are no veterinary colleges may be pardoned for believing that veterinary education has passed into history.

The love of animals and the humane treatment of them are matters of great importance to the veterinary profession from the economic point of view. The brutal owner is never a good client of the veterinarian, while the other calls him for trivial as well as for serious complaints. The one pays his bills grudgingly if at all, the other pays cheerfully and promptly.

To meet the needs of the constant increase in the editorial and clerical staffs and the space requirement of added equipment, accumulating records and library, together with a personal desire of the directors to own a home amid a more inspiring environment than the crowded downtown district, if not also to display by deed its confidence in the future of the veterinary profession, VETERINARY MEDICINE moves into new quarters surrounded with every comfort to meet the most fastidious inclinations, and every facility to improve the quality of its production.

It seems to be dawning upon the curious that there is a vast unexplored field in medicine away beyond the realm of bacteriology. It may be the realm of nutrition. Who knows?

Original Contributions

Small Animal Practice

By O. V. Brumley, Columbus, Ohio
Director of Clinics, Veterinary Dept., Ohio State Univ.

IT is an established fact the practice of veterinary medicine has been modified to a great extent during the past few years, so that instead of the veterinarian restricting himself to caring for the various diseases of the large animals, we find him paying a great deal more attention than formerly to some of the other animals, especially dogs, cats and the various breeds of poultry. This means to us as veterinarians that there is a growing demand for our services in taking care of practically all classes of animals, and as a result of this we must look the situation squarely in the face and prepare ourselves for such an emergency.

During the past few years we have had ample opportunity to observe the gradual change in the character of our practice; the automobile trucks and automobiles have reduced practice to a certain extent upon certain classes of animals. This is especially true in our larger cities, where horses were used exclusively for local transportation, deliveries, pleasure, etc.

However, in spite of this displacement of the horse to a certain degree, we will find veterinary practice better in the near future than it has ever been in the history of the profession. In support of this statement we feel safe in saying that there are several factors contributing to the betterment of the profession.

The Veterinarian Faithfully Constructive

In the first place, progressive, live veterinarians, who are trying to elevate the profession from every angle, so that the public has begun to realize that the men of our profession can be educated, trained for service, are equally as efficient in our profession as the physician is in his. We are all glad to see this change wrought, and no doubt all of us can look forward to the future and see better service, better appreciation of service, and a more hopeful outlook all around, because the veterinarian himself is willing to do something to get out of the rut.

Prospects Splendid

In the second place the value of livestock, now low, will increase during the next few years; even the price of good horses will keep pace fairly well with other animals, so that from an economic and business standpoint the owners will realize the necessity of expert advice and treatment for animals when sick. This is especially true with all meat producing and pet animals, and isn't it true that our calls are becoming more frequent in caring for these animals than formerly?

Rural Progress a Factor

In the third place, there is the education of the laity. Just to what degree this has been a benefit to the veterinarian is somewhat problematic, but we all must admit that the extension of the telephone, rural delivery of mail, the electric lines, better roads, have been a great uplift to the rural communities, and consequently given these people a much broader view of things, and has materially increased their respect for the advice and professional services of the veterinarian. It is also admitted there is still chance for improvement along this line, and we hope to see the day the laity will refuse to employ the uneducated, unprofessional man.

Education of the public on the importance of expert service is, in our opinion, of great value to the profession.

The Love for Animals Increasing

In the fourth place, people are becoming more attached to small animals and consequently there is a great increase in the number of animals kept simply for pleasure. Several years ago veterinarians were hardly ever called upon to treat this class of patients, but now a large share of the practice in cities is the so-called small animal practice. This practice is very remunerative, and it is gradually extending to the smaller cities and rural com-

munities.

In this connection we wish to call your attention to the great possibilities for giving advice and for practice in the poultry industry. The veterinarian must accept the newer conditions and adapt himself to them in every way.

A Source of Additional Income

We firmly believe our annual incomes can be doubled by taking advantage of all these possibilities. It is surprising how rapidly innovations develop when taken seriously and energy is devoted to them. You will find the county agricultural agents willing to co-operate on all these problems.

Our experience has shown that if we take responsibility and assume the right attitude there will be no difficulty in securing hearty co-operation with the state and federal agents in our communities so that mutual benefit will result.

You will please pardon these general remarks, on the ground that we wanted to emphasize the importance of considering veterinary practice in a broader sense than it was formerly, and because small animals are of greater consequence in our professional work than they have been in the past, depending, of course, upon the interest we display toward them, and the success we have in their treatment.

Equipment

Certain equipment is essential in small animal practice. We recommend first of all a clean, well equipped office, and if possible a waiting room similar to those used by physicians. This should be provided with comfortable, neat furniture, and should be well lighted and ventilated. In other words, a pleasant place for our patrons to wait in. Pleasing pictures with up to date literature add a great deal towards keeping up the tone of the office and the morale of patrons. Current veterinary and agricultural literature should be well represented.

Keep Office Orderly and Clean

Secondly, sufficient instruments and in proper order with some adequate way of sterilization should be provided. We think an ordinary copper boiler of small size would answer the purpose. Be sure that all instruments are thoroughly sterilized before using. An elaborate outlay for instruments is not necessary.

Thirdly, provision should be made for a few, clean, well lighted and ventilated cages. These should consist of an isolation cage or cages to take care of infectious cases. A few cages to house the regular patients. All of these should be kept clean at all times and painted occasionally. The painting will clean and disinfect them. Generous use of such reliable disinfectants as 3% liquor cresolis compositus is also recommended.

Lastly, we do not believe it possible to do satisfactory work in small animal practice without some diagnostic instruments. A microscope, phonendoscope, etc., should be available at all times. They should be in use every day in a small animal practice.

Examination

A careful, thorough examination should always be made in order to establish, if possible, a definite and accurate diagnosis. We are inclined to be rather lax in making our examinations and apply treatment before definite conclusions are arrived at. In small animals particularly there are many rather obscure diseases and conditions and unless we are very careful, mistakes will occur, which may lead to the use of wrong treatment and unsatisfactory results, discouraging both the practitioner and owner. At any rate unless the examination is thorough and a definite diagnosis is made, it is impossible to give a correct prognosis and rational treatment. The diagnosis cannot always be established even after the most thorough examination.

Feeding and Diet

The feeding of small animals is very important. We should make a careful study of the subject. In many conditions dieting is the most important part of the treatment. Many small animals suffer from too much food rather than an insufficient amount. A large number of cases need only restricted diet for several days.

On the other hand, nourishing and concentrated foods are required in animals recuperating from many diseases. Eggs, beef extract, salmon, lean meat, mush, oatmeal and milk constitute the common foods for weak undernourished animals. The ordinary dog biscuit as sold on the market can be used as the regular food, and varied with other foods as the case demands.

Table Scraps Not Recommended

Our experience has shown that indiscriminate use of table scraps, trimmings from meat, left overs from restaurants, etc., is often dangerous on account of preformed toxins, infections, foreign substances such as glass, etc., which may produce serious results. Dieting and selection of foods for our small patients is just as important as medication. Very sick

dogs and cats require special care regarding foods. Often they will eat certain things and refuse others. This must be determined and a diet fixed accordingly. Good care and grooming plays an important part in keeping the hair coat and skin in good condition.

Internal Parasites

In small animals, the parasites of the digestive tract are very numerous. They are found in large numbers in the intestines. They pass rapidly through the anterior portion of the digestive tract, which prevents their becoming fixed; also in this portion of the canal secretions for their proper development are lacking. In the stomach, owing to its acidity, they do not remain long, but are either destroyed or pass into the small intestines.

In a few instances, however, they may burrow underneath the mucosa of the stomach. The intestines are favorable for the development of parasites, owing to their length, the presence of an abundance of fluid, and the slow peristaltic movement of the bowels which does not materially interfere with their fixation and development.

Atmospheric Conditions and Veterinary Practice

A. A. Liebold, D. V. M., Chicago

(Continued from Last Month)

Exposure to a limited amount of cold air or drafts can give rise to diseases through chilling, particularly if the cold air strikes the body while it is very warm. Intense cold is not necessary to bring this about, but the change from the warm to the cold must be very sudden. In foggy, cold weather, lambs are particularly liable to develop severe muscular rheumatism.

The exact nature of a so-called cold is not fully understood. It is usually assumed that the contraction of the skin vessels caused by the cold temperature results in a hyperemia of the internal organs, especially the mucous membranes and most usually those of the respiratory tract. Frequently there also occurs varying degrees of pneumonia, that is hyperemia, exudation, formation of fibrin coagulums in the lungs, capillary and other small hemorrhages in the lungs, trachea, larynx and pharynx, with a simultaneous decrease and weakening of the phagocytes. Aufrecht traces the coagulation of the blood in the lungs and other organs to the toxic substance resulting from the destruction of the leucocytes produced by the irritation of the cold; and the vascular changes, which permitted the hemorrhages he attributes to the toxic substance in the blood arising as a result of it being cooled off. The protective epithelium of the respiratory tract suffers injuries through the exudations and hemorrhages, and these areas of lowered resistance act as points of entrance or invasion of pathogenic bacteria. It has been proved that in many diseases resulting from a chill, such as pulmonary and mammary inflammations, a simultaneous infection does occur. However, there is no doubt that beside these, there are true chill-diseases in which there is no infectious matter concerned. In this group would fall muscular rheumatisms, neuralgias, laminitis, spasmodic colic, etc. These are views upheld by Klimmer.

The most effective prevention against chill and catching cold is hardening or toughening the animals, proper care of the skin and avoidance of sudden severe temperature changes, etc. The animals should become accustomed to cold. First found in both man and animals that repeated short and mild cold and heat irritations of the skin produced a thickening of the epidermis up to eight times the normal; by this means the terminal points of the cold or sensory nerves became more protected and therefore less exposed to the cold.

Atmospheric Pressure

Atmospheric pressure, which is due to the weight of the atmosphere, is of questionable importance to veterinary medicine. At sea level the air pressure amounts to 2.2 pounds for each .1549 square inch. A full grown cow, whose body surface may amount to 64.58 square feet, is subjected at sea level to air pressure amounting to 132,276 pounds. Air pressure is, of course, not perceptible, since it comes from all sides and the body is not compressible. As one passes upward from the sea's level the air pressure diminishes.

The greatest importance of air pressure is the manner in which it influences the weather. There is as yet no unity of opinion as to whether the fluctuations in air pressure, as they ordinarily occur, exert an immediate in-

fluence on the health of animals. Slight fluctuations probably do not have much, if any, effect. However, there are authorities who assume that there is such an influence exerted. Chief among these is Krogoe-Petersen, who claims that parturient paresis, or milk fever, in cows only occurs when the barometer, that is, the air pressure, is low or falling. He looks upon it as a cerebral anemia resulting from a hyperemia of the cutaneous vessels and a transitory hyperemia of the mammary vessels. The cause of the hyperemia he believes to be the diminution of the atmospheric pressure on the cutaneous vessels, the effect being increased through the diminished intra-abdominal pressure following parturition. According to Anderson, cows suffering from parturient paresis, before it became customary to inject air into the udder, were more easily cured when the air pressure was rising than when it was falling. Dressler considers that certain forms of colic and some other diseases increase when the weather is hazy and damp, that is, when the air pressure is low. It is not explained by these men how cases of parturient paresis occurring before parturition are produced.

Atmospheric Movements

Atmospheric movements arise through the differences in the atmospheric pressure, and these, in turn, are caused by the differences in temperature, high temperature causing expansion, and low temperature contraction of the air.

Wind has a direct influence on the heat loss from the body, since air movements increase the conduction of heat from the body and increase the heat currents. It is refreshing during intense heat and causes freezing or chilling during intense cold. A strong wind will also interfere with an animal's breathing when it is forced to run against the wind. The direction from which the wind comes has a decided influence on both the temperature and the humidity of a locality. We all know that the north, and especially the northwest wind, are the coldest and the west winds on the average the driest, although the dryness is often changed to comparative high humidity if the dry wind first sweeps over a large body of water. These colder winds can lead to chilling and diseases of the respiratory tract, etc.

The air movements are also of importance in that they influence the weather, mix the air and carry away impurities, producing ventilation. Impurities, which may even lead to poisoning, may be brought from a distant part to some other region, where they settle on food plants. Infectious matter is also transmitted in some cases by the air currents, as previously shown.

Precipitations

The various precipitations, rain and snow, result from the condensation of the water vapor in the atmosphere, due to cold. The quantity of the precipitation is, of course, dependent upon the extent of the saturation of the air and the intensity of the cold.

The influences of rain, etc., are very numerous. Among the beneficial influences we have the cleansing of the air and the earth, settling the dust and furthering the growth of plant life; also, it is refreshing during intense heat and rids the body of dust and insects.

The precipitations may cause harm in that they can be the cause of diseases due to sudden chilling and can cause disturbances of nutrition. A cold cloud burst striking an over-heated animal can cause serious disturbances of health. Disturbances of nutrition may be observed in sheep after a protracted rain, producing chlorosis, anemia and hydremia, due to the fact that the forage contains insufficient nutrition and too much water. Furthermore, rain favors the development of parasitic and so-called soil diseases, such as distomatosis, lungworm and stomach worm infestations, anthrax, black leg, etc., as mentioned previously when I spoke of humidity.

Mowed grasses leech out during prolonged or repeated rains and then decomposes more readily. A warm rain following a protracted drought will cause a rapid and luxuriant growth of forage plants, which may cause tympanitis when eaten green. Feed that has grown during a prolonged rain contains more water and less nutritious substances than other feed. Frost bitten feed gives rise to catarrh of the stomach, colic, diarrhea and abortion in animals whose gestating period is drawing to a close, according to one authority. It is also known that such feed will cause tympanitis. These diseases can be easily avoided by allowing the feed to first dry before being fed, or by feeding the animal some dry feed before turning them out onto pasture so that they do not eat the frost bitten grass on an empty stomach.

Swine Practice

Edited by A. T. KINSLEY, M.S., D.V.S.

Sterility

STERILITY is relatively common in sows throughout the corn belt. Slow breeders and sterility in boars is not uncommon. These conditions have recently attracted the attention of the veterinarian because there are more pure-bred herds of swine than formerly and breeders are becoming educated to greater efficiency in production. The older practitioners, no doubt, have observed this condition in swine for many years, but they were seldom asked advice as to its cause and prevention. Sterility in swine is not a new disease or condition, but is one of the many newer problems that falls within the domain of the practicing veterinarian.

Extent and Distribution

It is not possible with the present available information to even estimate the extent of sterility in swine. It is not uncommon to find eight or ten sterile sows on the ordinary farm and in some instances an amazingly large percentage of the breeding sows are found to be sterile. Sterility is not confined to any particular breed, but is apparently equally common in all breeds. It would appear, although the available information may be misleading, that the condition is most common in sows that have successfully produced one litter of pigs. On the other hand, it has been observed in sows from three to five years of age and in gilts. Sterility is also reported to occur quite frequently in boars. The condition is most common, according to the reports of practitioners, in young boars. Sterility is probably equally prevalent in all sections of the country, although the significance of the condition is more fully appreciated in those areas where swine are produced extensively.

Causes of Sterility

An occasional case of sterility occurs in either gilts or boars as a result of improper development or malformation of the genital organs. In breeding beyond a certain point diminishes the reproductive powers and is a factor that must be more carefully considered in swine breeding. Insufficient exercise and over-feeding, resulting in excessive accumulation of fat, is one of the common causes of sterility, particularly in young sows.

From recent investigations it would seem that certain mineral foods are essential for the maximum of reproduction. Some breeders have demonstrated that slow breeders and non-breeders can, in many instances, be made positive breeders by supplying a proper ration in which there is the required mineral constituents. Perhaps the largest number of cases of sterility in either sows or boars is the result of previous disease. There has been an infectious abortion disease rather wide-spread in swine in this country. Metritis is a common sequel of abortion and precedes sterility in a large number of cases.

Non-breeding or sterility in boars is commonly the result of an injury to the male organs. The injury may be due to mechanical interference, or it may be the result of overuse or abuse. Small litters and those litters in which the pigs have little vigor or vitality can frequently be traced to a boar in which the testicles have been damaged.

Symptoms of Sterility

Sterile sows often show no evidence of the existing condition, excepting their failure to conceive. Some non-breeding sows, especially those in which the sterility is secondary to metritis, show the estral periods regularly, others irregularly, and an occasional sow is observed to be constantly in heat. In some cases there is a continuous purulent vaginal discharge indicating a purulent inflammation of the vagina or uterus. Gilts have been observed, in which there was a copious purulent vaginal discharge at the beginning of the estral period and which would indicate pyometra. Sows that are sterile are usually in good condition, although a few cases have been observed that were unthrifty or emaciated, probably the result of absorption of purulent or putrid materials from the uterus.

--Sterile boars in which the sterility is not traceable to inflammatory diseases of the testicles are usually in prime butcher condition. Sterility resulting from orchitis is usually associated with unthriftiness and the affected individuals have a disturbed locomotion.

Prevention of Sterility

The occurrence of sterility can be diminished by observing the proper methods of breeding, feeding and general care of swine. Although in-breeding and line breeding are of value in establishing some peculiarity or characteristics, such breeding must not be continued until it diminishes the vigor of the offspring or produces sterility. Breeding swine should not be given a fattening ration, but should be provided with a maintenance ration. The mineral ingredients necessary in a ration for breeding sows and boars probably varies in different locations. From the evidence now

Sterile Sow, Apparently Healthy, Bred 20 Times Unsuccessfully

available it would seem that little if any feed has sufficient mineral ingredients to give the best results, and thus it has been advised that mineral substitutes be provided.

It appears this problem is likely to differ more or less in each community, and it would therefore be a community problem that the local veterinarian could best advise upon. Reproduction is much more certain in animals that are required to take a certain amount of exercise. Breeding swine should not be kept in small pens. Sows that have recently aborted, and those showing a discharge from the genital organs, should not be bred until the condition causing the discharge has been overcome. These sows should be segregated in one pen or lot and kept separate from the healthy swine.

Excessive use of a boar frequently causes an acute congestion or inflammation of the testicles which diminishes the vitality of the sperm cells and may destroy them entirely. Sows rarely conceive when served by a boar in this condition. This condition can largely be avoided by the proper use of the boar. Young boars should be used in service once every other day. Mature boars may be put in service once daily, and known positive breeders may, for a short time, be given two services each day.

Boars should not be permitted to serve sows that are known to be diseased, or even suspected of being affected, for the boar can probably carry infections from a diseased to a healthy sow. A sufficient ration of the proper foods should be provided for a boar during the period of service.

Treatment of Sterility

The provision of proper foods, surroundings and general sex hygiene is a detail that should be exercised by the herdsman or breeder, and the treatment of disease is the duty of the veterinarian. Some of the cases of sterility in sows, resulting from disease of the genital organs, can be relieved and the sows become certain breeders. The procedure for relieving such cases depends upon the nature of the disease. In some cases it is necessary to destroy cysts on the ovary.

Rupturing ovarian cysts in sows may be done by palpation through the rectum provided the sows are relatively large and the hand and arm of the veterinarian is small or medium in size. The accompanying cut is from a photograph of a sow that had been bred about twenty times to several different boars before being treated by rupturing ovarian cysts, by Dr. D. S. Otey.

This sow was bred ten days after treatment, conceived, and farrowed fourteen pigs. Dr. Otey describes his method of procedure as follows: "The sow is placed in a crate and confined by tying in such a way that she can not move. After lubricating my arm with soap, the hand is passed very carefully into the rectum. My hand and arm are small and I do not attempt to treat any animal that weighs less than 400 pounds. The wall of the intestine is very tender and is easily punctured, and therefore care should be exercised in grasping the ovary.

"The left ovary is manipulated with the right hand and the right ovary with the left hand. The ovarian cysts are ruptured in the same manner as those of the cow." Cystic ovaries

may also be treated by making an opening through the abdominal wall similar to the incision made for the flank method of the Cesarean operation. This method of treatment is radical and it is doubtful if it should be advised, except in extreme cases.

Douches for Uterine Infections

Uterine infections can usually be overcome by douching with sterile salt solution once daily, or in extreme cases of purulent infection, tincture of iodine in water may be used. The intramuscular injection of ten to twenty grains of quinine bisulphate is of value, particularly in the acute cases of metritis. When the uterus of a sow is irrigated it is advisable to confine the animal in a crate and raise the

Same Sow, After Farrowing 14 Pigs.

front end sufficient to obtain the advantage of drainage. The uterus should be well drained of the irrigation fluid.

Sterility due to inactivity of the ovaries can, in some instances, be overcome by the judicious use of Yohimbin, which apparently increases the amount of blood passing through the ovary. Slow breeding boars and sterile boars, in which the sterility is due to inactivity of the testicles, are usually benefited by the administration of Yohimbin.

The veterinarian who makes a careful study of sterility in swine will, no doubt, find conditions that we have not described, and any further verified information concerning sterility from practitioners will be given proper publicity. Sterility in swine is of importance and the practicing veterinarian should be properly prepared and equipped to render service in this capacity.

While many sows may farrow twenty or more pigs per year, the annual average number of pigs per sow that reach maturity is fewer than eight.

POLYARTHRITIS

Polyarthritis is the name applied to a condition in which there is a subacute or chronic inflammation of the structures of the joints. Many inquiries are received during the late winter and early spring months relative to this malady from practitioners in the north central states. The frequency and importance of this condition warrants a brief discussion of it at this time.

Extent and Distribution

The extent of this disease is difficult to ascertain, because most feeders and only a relatively few breeders recognize the malady which is essentially chronic and is insidious in its onset. The disease is usually not identified until the swine are slaughtered. The prevalence of the disease is, at least to some extent, determined by the weather conditions during the period that the swine are developed. Cold, damp weather appears to be favorable for the occurrence of polyarthritis. The disease occurs with equal frequency in all breeds of swine and it is as common in gilts and sows as it is in barrows or boars. It is primarily a disease of young animals, although if affected individuals are kept, the disease persists, and therefore, occurs in the mature animal.

The most reliable information available, indicating the distribution of polyarthritis, is the post mortem findings in packing houses. According to this information polyarthritis is most common in the north central states.

Cause

Cold, damp weather predispose pigs to polyarthritis. The disease is apparently more prevalent in swine that are not properly housed in the winter time. Cement floors, if not properly covered by dry bedding, is conductive to this and other diseases. The B. pyogenes suis has been identified in the affected joints of swine, but it has not been determined whether this microbian agent is the specific cause or an associated organism. Some investigators are of the opinion that polyarthritis is a condition resulting from navel infection.

Symptoms

The first manifestation of the disease consists of disturbances of locomotion. The affected joints are usually swollen and sensitive. The early symptoms of the disease are frequently overlooked by the caretaker for in many instances, the affected swine will evidence slight lameness for a very short time. The

manifestations of the disease after the acute stage has subsided, consists of a general unthriftiness and there may or may not be visible enlargements of the joints. There will be interference with joint action, the extent of which will vary with the nature of the joint lesion.

Lesions

The affected animal may be under-developed and more or less emaciated. The lesions of the joints are variable, depending upon the extent, intensity and chronicity of the process.

In the less severe cases there is a mild synovitis characterized by a limited infiltration into the joint cavity and perisynovial structures. The fluid in the joint cavity will be turbid and may contain coagulated material. As the disease progresses, there is a fibrous proliferation in the synovial membrane and surrounding membrane and surrounding tissues. In some cases there are erosions of the articular cartilages and there may be fibrous proliferations within the joint cavity.

Prevention

The economic loss incident to porcine polyarthritis, that is sustained by the breeder and feeder, is preventable. Veterinarians are not doing their full duty unless they properly advise men interested in the swine industry, of the proper methods of preventing polyarthritis. It is first advised that proper surroundings be provided for sows during the farrowing period, thus preventing or at least diminishing the possibility of navel infection to a minimum. After weaning, the pigs should be properly housed, thus preventing undue exposure. Cement and concrete floors should be covered by ample bedding. Some have advised the use of a bacterin containing the B. pyogenes. This may be of value in the early stages. The local application of hog packs will reduce the intensity of the acute attacks.

VETERINARY MEDICINE is at your service. We believe that practitioners have some additional information on porcine polyarthritis, and we will be glad to have your comments for future publication. It would appear that there is a possibility of a more efficient service in the prevention of disease in swine and we shall be pleased to help in this important problem.

A preliminary dose of morphia hypodermically does not increase the anesthetic action of chloral hydrate.

PICA IN SWINE

I have under my care a herd of hogs that have acquired the habit of eating wood and tearing fence boards. I have used tankage, minerals, wood ashes and coal but these have done no good. Any suggestions from you would be greatly appreciated.—A. S., Iowa.

REPLY—You have not stated the nature of the feed these swine are receiving. How old are the swine? How large is the lot in which they are maintained? Has there been any necrotic stomatitis in this lot? If you will answer these questions, I will be glad to respond. From the information you give it is difficult to arrive at a diagnosis, although I would suspect that the trouble is either of dietary origin or due to some defect or injury to the structures of the mouth.

"PETRIFIED PIGS"

I am writing you regarding a condition that has been brought to my attention by a breeder of swine in this community.

A sow farrowed eight petrified pigs and one that had a diminished vitality. However, it lived for about twenty-four hours. The petrified pigs were the same size as the live pig. The petrified pigs were black, dense and hard, appearing like charcoal but were more dense.

The period of gestation in this sow was 122 days. She is an extra large animal, weighing about 650 pounds. This sow has been bred for a March litter and the owner is wondering whether or not there will be a repetition of the production of petrified pigs.

The sow was in a two acre lot on a timothy and clover pasture. She had been fed a small quantity of ear corn and shorts slop, and had tankage in a self-feeder. The occurrence of petrified pigs and a live pig in the same litter is a little unusual. We are wondering how many veterinarians have observed like incidents.—F. J. K., Illinois.

REPLY—This is a case of superfetation, in other words, fecundation of the pregnant. The mummies and the live pig came from two different services of the boar. If the uterus has not been damaged the sow should suffer no permanent effects.

On the other hand, it might be claimed that these cases are due to streptococcic infection of the placental corium of the particular pigs affected. We have classified this case as superfetation on the ground that the pronounced state of petrification could not have developed in so short a time.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

A Few Words on Milk Fever Medication

AS regards milk fever medication. I have read, with no little interest, the discussion that took place at the last meeting of the A. V. M. A. at Denver on the question of drugs best suited in the relief of parturient paralysis. There has likewise been some discussion on the same subject in the recent numbers of VETERINARY MEDICINE. We find there are some that have been unfortunate enough to use strychnin hypodermically in these cases. I say unfortunate because:—

First, while strychnin is always dangerous to the cow, it is particularly so when her heart needs prompt stimulation.

Second, because strychnin does not give the heart the stimulation we have been led to believe.

So much of this controversy has prompted me to again discuss the subject of milk fever, particularly the treatment, notwithstanding that I attempted to cover it rather thoroughly in three articles published in the April, May and June numbers of Veterinary Medicine, 1919.

Under treatment I stress the importance of cleanliness of technic, special and proper inflation, and medication to avoid collapse. It would seem an unnecessary repetition to recite that article in detail, but the following seems justified:

On page 241, the May, 1919, number of Veterinary Medicine, I mention under Complications.

"Another complication which writers on Veterinary obstetrics seem to have failed to consider and one of the complications to be feared where the attack is particularly severe, and the animal has been suffering for several hours without receiving proper relief, is acute uremia, which is manifested by chronic contraction of the legs and neck muscles, followed by general epileptiform convulsions as the animal lies prostrate on its side. Such a case in addition to prompt catheterization and inflation of the udder should receive the most judicious hypodermic medication of diuretics and diaphoretics, choral per rectum and lobeline subcutaneously are also indicated. **Arecolin and Strychnin in these cases are dangerous and almost surely fatal."**

Technic and Medication

*The technic consists solely in dilating or inflating the udder with oxygen or filtered air with sufficient pressure to reach every part of the udder, and still not use such force as to injure the udder tissue and cause the air to escape into the flank and under the skin, producing an annoying, if not a serious complication.

The apparatus most commonly used at the present time is a small cylinder packed with gauze or aseptic cotton through which the air is forced either by a bulb similar to the bulb that has been used in connection with the thermocautery for the past two decades, or a small metal pump as shown in the cut. On the other end of the cylinder is a small rubber tubing to which is attached a milk tube to convey the air into the gland.

In order to avoid contamination, two things must be taken into account: (1) The cylinder and milk tube must be kept clean by either regularly boiling or immersing in a reliable antiseptic. (2) The packing of the cylinder should be replaced often enough to properly serve the purpose for which it is intended.

The Pump of Choice

Some practitioners are of the opinion that the bulb inflates more rapidly and more thoroughly than the metal pump, but in my judgment it has the disadvantage that it is not dependable and may rupture at the critical moment when another bulb is not immediately available. The embarrassing effect of this is not always relieved by a veterinarian carrying an additional one in his bag, since it too may be very defective, if it has been carried

*Page 302, Veterinary Medicine, June number, 1919.

long enough for the rubber to have deteriorated, even though it has done no service.

Some veterinarians resort to a pump carried to inflate auto tubes, this, however, has the appearance of an unprofessional makeshift, and we have frequently been called to treat animals where others by some methods have produced a subcuteaneous emphysema covering almost the entire body. When one approaches a case of milk fever it is well to place the milk tube (which may be left attached to the apparatus) in a basin containing a suitable antiseptic, thus making sure that it will be exposed to the antiseptic at least several minutes before being used. It is well to have the solution of sufficient strength to leave no doubt as to its efficiency, but it should also be well diluted by adding water before being used, so as to avoid the possibility of the tube carrying too strong and irritating a solution into the teat.

Restraint Necessary

The next important step is to see that the animal is effectively secured so that after the udder, flank and upper leg have been properly cleansed and the act of inflation begun, which usually causes the animal to struggle after one or more quarters are inflated, the danger of reinfecting the udder area or impeding rapid, clean technic is reduced to a minimum. If attendants are not available the animal should be placed on her side and the head secured; the lower hind leg drawn well out and secured, which will also be of great advantage in properly inflating the lower quarters. A rope placed around the hock of the upper leg and drawn backward and upward completes the restraint. Time and trouble consumed by this method will oft-times avoid embarrassment and criticism of particular and appreciative people who are the ones really worth while.

Preparation of the Udder

The whole area about the udder, flanks and hind legs should be thoroughly washed with soap and water and then rinsed with clean warm water. If clean towels are available it is well to dry off any of the surplus water and then milk out the udder. The teat ends are then disinfected. Authorities seem to differ as to the advantage or disadvantage of milking the udder dry before inflating it. My experience leads me to believe that milking out before inflating is best, as it permits of a better and more uniform inflation.

A clean towel or cloth should now be placed under the udder to guard it from rolling around and becoming soiled on the floor or bedding. With care and promptness the tube is then passed from the basin into the teats.

The lower quarters should be inflated first, since if the animal begins to struggle, which she is apt to do after one or two quarters are inflated, her struggles will interfere less with the technic of inflating the upper quarters. It is well to have each quarter so thoroughly distended that it is drumlike.

Teat Tourniquet Advised

I cannot agree with those who believe it is no advantage and not necessary to tie each teat immediately after the quarter is inflated. Experience has clearly shown me in practice where an assistant has been taught that this practice is not necessary, that the cases treated by such an assistant have always been more or less tardy in regaining their feet and the cases requiring reinflation are out of all proportion to the cases in which the ligature has been applied.

For tying the teats I prefer wide strips of strong muslin or canton flannel, say 2½ to 3 inches wide; this is tied well up toward the base of the teat and not near the apex, and is tied absolutely tight. Instructions should be given that the bandages are to be taken off as soon as the animal rises, but under no condition to be left on longer than five hours. By this method we never had a single case of necrosed or injured teat.

Some Fatalities Explained—Preventive Medication

Practitioners are more or less familiar with the fact that occasionally a case, particularly those that have approached the point of death and rally rather quickly, rising or attempting to rise as promptly as some cases where treatment has been applied in the early stages, to their great chagrin and not infrequent condemnation, such animals have dropped down, giving a struggle or two, and died—plainly from what is styled heart-failure.

When we stop to consider how disturbed the circulation has been in these cases it is rather astonishing that the center of circulation can possibly become readjusted as promptly as it appears to in this malady, and the wonder is that such fatalities are not more common.

To overcome this it has been our custom for years, to give a heart stimulant and regulator, beginning such medication just as soon

as there is evidence of consciousness returning, or immediately if the animal is not unconscious at the time we treat her.

I prefer a mixture of nux vomica, strophantus and digitalis. The dose is repeated in one hour, and again in two hours, and again in three hours, if the condition warrants it.

Since we have practiced the administering of this heart adjutor we have not had a single case of heart failure in approximately nine hundred cases. Another type of cases that in our literature seems to have received no attention, are those where one or more quarters of the udder is suffering either from acute garget, or induration or atrophy, as a result of chronic mammitis. Such quarters cannot be satisfactorily inflated and rarely respond promptly to treatment.

Thorough Inflation Required—Repetition

Every effort should be made to inflate each quarter as thoroughly as possible, and the veterinarian should keep in touch with such cases since it may be necessary to repeat the inflation one or several times. The best results will be obtained where improvement is not marked, if reinflation is practiced about five or six hours apart. As a matter of fact in every case of parturient paralysis the veterinarian should either remain with the animal if it is a great distance from his office, for a time, or return and see it or get some very definite information at different intervals, as to its progress for the first twenty-four hours after treatment. There are many minor happenings that may interfere with the satisfactory recovery that udder inflation, phenomenal as it is, will not take care of, and the veterinarian who makes it a practice to hurriedly inflate an udder and then dismiss the case, is sure to have an occasional experience that will cause dissatisfaction and regret.

Cathartics Seldom Necessary

Except in complicated cases cathartics, diuretics and catherization are useless and unnecessary.

In cases where parturient paralysis sets in while the animal is in the act of calving, the fetus should be promptly removed before the udder is inflated, unless this occasions too much delay, when the reverse should be the order.

Digitalis in Milk Fever

Digitalis, first recommended by William Withering in 1775, is one of the most dependable and widely used drugs in medicine today, but acts too slowly for emergency use. It best serves its purpose in cases of failing compensation, and if used in acute cases, it should be restricted to those wherein immediate results are not necessary.

For oral administration, the leaves are most active and dependable, in that they contain all the glucosides, and, because they deteriorate less rapidly; the official tincture ranks second, losing about 40 per cent in from seven to fourteen months.

It should be remembered that digitalis does not do its maximum work for seven hours after being administered, irrespective of amount given, so we give it, at least, every six hours, to get a continuous action. Most of the patented preparations of digitalis for subcutaneous injection, are made from glucosides, omitting digitonin, which has no value as a heart stimulant. Solutions of, and combinations containing digitoxin (dose, 1/4000th grain) are the most efficacious, and are indicated when the patient is unable to take the leaf by mouth. **Even with this method, we fail to get results within five hours.**

There is a method of using digitalis which is rapidly gaining deserved popularity, and this is so-called **"digitalizing"** a patient. If a patient exhibits signs and symptoms of a heart lesion, and is about to be delivered or operated upon; or, possibly, in an early stage of pneumonia or influenza, and may need digitalis at any time during the illness, a drachm of tincture may be given daily in divided doses, for one or two days, and then when stimulation is indicated, later, we get results without delay. This is a practical and satisfactory method.

There are several ways of computing a large single dose. Robinson gives 15 cc. of tincture to each hundred pounds of weight. Eggleston has worked out some practical methods of determining amount of digitalis to be given. Weight of dry drug in milligrams, which is required to kill 1 kg. of cat, when solution is injected slowly and cautiously, is usually 100 mg. and is called a "cat unit." Average total amount of digitalis required for oral administration to man is .15 of one cat-unit, per pound of body weight.

Report of a Case. Bos. Med. and Sur. J., 1921, 185, 15. Thos. J. O'Brien, The Cornell Veterinarian, October, number, 1921.

Meat eating is quite as important a matter to the veterinary profession as meat making.

Purely Practical

"It is surprising how easily a dog will swallow a very large capsule of two, four or even eight-dram capacity."—Quitman.

There is very little danger of being bitten in administering pills to dogs if the hand is passed boldly into the mouth.

"Carbon bisulphid will clean all of the bots from the stomach and take all of the ascarides out of the small intestines, but it stops there."—Hall.

When the stallion begins to fall below the expected standard as a foal-getter, blister the testicles with cantharides. It will make a change for the better.—Head.

"Oil of chenopodium will clean out about all strongyles and sclerostomes from the large intestines of horses and is effectual against ascarides of other animals, but it is of no use for bots."—G. G. Blank.

"I have little patience with the theory that hog-cholera is a lesionless disease. If this be true we are never justified in making a diagnosis of hog-cholera excepting in such cases as present no lesions."—Koen.

Intravenously, chloral hydrate produces a prompt general anesthesia without any initial period of excitement. The full effect is felt in less than ten minutes and the anesthesia lasts for two hours or more.

Professor G. Udriski reported to the Tenth International Congress that the intraperitoneal injection of chloral hydrate is an excellent anesthetic for horses, asses and dogs.

Twitch the horse; grasp and twist the ear of the mule; thumb and index finger in the nose of the ox; arm at the breast and hand at the rump of the sheep; snare the snout of the hog; and grasp the feet of fowl and place the body under the arm.—Maxfield.

For weeping skin diseases picric acid solution cannot be beaten.—G. G. Blank.

For azoturia we use oxalic acid and gelsemium and find that it not only acts as a sedative but also relaxes the muscles.—Ibid.

The dose of carbon tetrachlorid for horses is from 25 to 50 cubic centimeters (6 to 12 drams). It may be given in capsules or as a drench with oil.

It is not generally known that a good general anesthesia can be produced by sub-arachnoid injections of cocain, stovain or novocain delivered between the occiput and atlas.

There is an almost inexhaustible supply of "Purely Practical" points. Think, what a privilege it would be to have access to a reservoir containing them all.

From the convincing experiments of Maurice C. Hall and J. C. Shillington on the actual virtue of anthelmintic drugs, carbon bisulphid, oil of chenopodium and carbon tetrachlorid belong in the front rank.

In administering carbon tetrachlorid to ruminants, Hall recommends that it be mixed with castor oil, believing from the results obtained that much of the mixture flows right on to the duodenum.

"Anthelmintics for hogs administered in slop lose much of their medicinal properties by dilution—mass treatment with drugs as toxic as anthelmintics is dangerous. I know of no way except to catch the animal and give it a dose that fits the case and condition."—Hall.

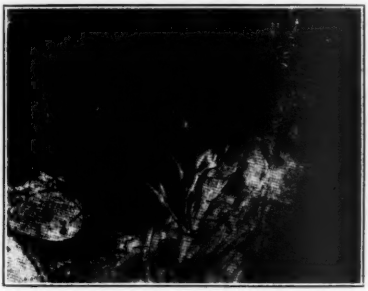
"With all due respect to DeVine and Ferguson, allow me to suggest that the family cat has the dog beaten to a frazzle in making a stubborn cow rise. Grasp pussy by the tail, allow the business end to connect with bossy's ears and she's up and going without further procrastination."—Porter.

General Practice

Edited by L. A. MERILLAT, V. S.

Interstital Scrotal Hernia

Failure to distinguish interstitial hernias from the ordinary congenital ones account for the numerous fatalities and recurrences following herniotomies in domestic animal surgery.



Dissection of a Normally Closed Inguinal Ring.

A review of literature on animal kelology shows that only one kind of scrotal hernia has been described. Many years ago, we attempted to show from autopsies held on horses dead from misdirected hernia operations, that there are some hernias differing from those in which the contents co-habit the vaginal process with the testicle and spermatic cord. We have found that not infrequently, like in humans, the hernia sac is constituted of a separate fold of peritoneum saculated through an opening adjacent to the internal inguinal ring and not through it.

These hernias we have called "interstitial" because they are caused by a breach of the aponeuroses of the abdominal wall and not by a non-closed ring.

The importance of this lies in the fact that ordinary hernia operations which deal only with the vaginal process as the sac, often miscarry, because the real sac and the aperture through which the viscera leave the abdomen is entirely overlooked, inviting fatal post-operative prolapse and recurrence.

In operating upon horses and pigs this separate sac may not be observed because its contents in the dorsal recumbent position fall back into the abdominal cavity and thus collapse it into a very indistinct structure that is pushed aside unobserved and often torn in the dissection of the vaginal process which is thought to have harbored the viscera while the patient was standing.

The Cause of Insterstitial Hernia

Just what will cause a breach in the abdominal wall in the inguinal region we have never been able to demonstrate to a certainty. The aperture may be traumatic or it might possibly be congenital, as sometimes occurs in ventral hernia in the region of the umbilicus, where perforations are found adjacent to but not connected with the navel aperture. Then they may, as in human beings, be charged to muscular strains induced by rearing, jumping or, in stallions, by serving mares.

Dissection of a horse dead from scrotal hernia. 10-Scrotal Sac. a^1 Hernial Orifice. A skewer is shown passing through the inguinal canal.

There are two very weak points in the abdomen of horses (a. a. Fig. I) that might easily be torn open in this manner. They are located on each side of the prepudic artery adjacent to the internal inguinal ring. The fact that hernias sometimes develop in mature stallions and even in geldings that have never

before shown any enlargement in the inguinal region would indicate that purely acquired (traumatic) scrotal hernia is not a rare disease in domestic animals.

We have also found that these weak places in the abdomen are characteristic of certain individuals and in which muscular strain or even muscular contraction would seem sufficient to cause a rupture.

Location and Character of the Aperture

The breach in the abdominal wall that allows the peritoneum to sacculate by the weight of the intestines, we have found at two different locations: one medially and one laterally to the prepudic artery and always just below the internal inguinal ring. (Figs. 1, 2 and 3.) Here the walls are very thin and with the

Dissection of the Inguinal Region of a Horse Dead from Intestitial Hernia. Dark Oval Spot Shows Location of Orifice Below the Inguinal Ring.

complex arrangement of the aponeuroses, determine the location at which tears may be expected. In some cases we have found that the prepudic artery is the anterior boundary of the aperature, and in others, it formed the posterior boundary.

The aperture is irregularly oblong and extends obliquely from before backward and medially.

Its edge is thin except along the artery where it is rounded and more bulky, and in every case, corresponds to the thickness of the abdominal wall of the particular subject, at that point.

The Hernia Sac and Contents

The sac is composed of peritoneum that was pressed down through the aperture. At first it is thin, in fact very thin, but later it becomes thickened from the mild inflammatory process that supervenes. Exteriorly it is adherent to the scrotal skin and to the vaginal process, or if a bubonocele, to the skin of the inguinal canal. The interior of the sac is smooth, lined with endothelium and only in rare instances, denuded and adhered to the intestines or the omentum it contains. Adhesions of wall to contents are more common in interstitial hernia than in the purely congenital one located in the vaginal process with the testicle.

The contents may be intestines or omentum, or both. The prolapse of a long fold of omentum after castration is often due to an aperture adjacent to the internal inguinal ring Fig. 3, a dissection of a horse three years old, dead following castration, is one of these. Some hours after the horse had been castrated with an emasculator, in the standing position, a long string of omentum was found trailing almost to the hocks. The owner not having access to trained help, or advice, cut it off at the level of the scrotum. The bleeding that followed, and the dirty method proved fatal.

Differential Diagnosis

Differential diagnosis is not a difficult matter to one familiar with the inguinal region, on palpation. In the congenital, or usual hernia the aperture, on rectal exploration, is felt where the normal ring should be found; while in the interstitial hernia there is a normal ring and an adjacent aperture, oblong in shape and extending in an oblique direction from before backward toward the linea alba, and along one edge the pulsations of the prepudic artery can always be felt. In small animals the differentiation is more confusing, and must be made by a palpation externally, with the subject on its back and its inguinal region well exposed by parting the hind legs. When the region is not covered with too much ventral fat, it will not be difficult to decide that the perforation is nearer to the median line of the body than the inguinal ring, where the opening would be found in congenital hernia; then besides, in the small animal, including the pig, the abnormality is more easily discovered during the operation than in the horse.

In short the correctness of diagnosis of scrotal hernias in the horse will depend upon the rectal exploration while that of the small animal, upon external palpation and, when uncertainty exists by very careful dissection.

In dogs, the so-called inguinal hernia, is in reality seldom connected with the inguinal canal, but like the interstitial hernia of horses and pigs, perforates the abdomen adjacent to it.

TECHNIC TO BE PERFECTED IN BOVINE SURGERY

Restraint of cows, bulls, calves and steers, in recumbent and standing positions.
General anesthesia.
Rumenotomy.
Ablution of the rumen.
Administration of drenches.
Administration of intra-venous medication.
Castration of young and mature males.
Ablation of new growths.
Operation for ventral and scrotal hernias.
Extirpation of growths in the teat ducts.
Irrigation of the milk sinuses.
Operation for hard milkers.
Dentistry.
Anesthesia for dehorning.
Trephining the frontal sinuses.
The use of the stomach tube.
Administration of medicines with the stomach tube.
Treatment of warts.
Amputation of the digits.
Wounds of the udder and teats.
Removal of foreign bodies from the reticulum and rumen.
Cesarean section.

APROPOS THE STOMACH TUBE

It hardly behooves one of my tender years to enter into a discussion with such men as Dr. Merillat and my friend, Dr. Devine, but I also feel that I must say a word along with Dr. DeVine, in defense of my good friend, the stomach tube.

I cannot for the life of me see how anyone can justly say anything in condemnation of it, unless it is because they haven't used it enough to find out for themselves. Dr. DeVine has left unsaid one or two of the most important points. What he says about its use in acute gastritis, when the stomach of the horse is badly distended with gas, is all very fine.

Saves Many Lives

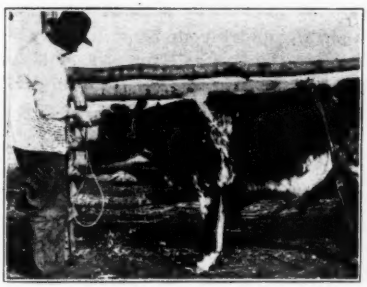
I can recall many cases where I am reasonably positive the animal would have died without the use of the stomach tube. One case in particular, the animal had not been sick an hour, and immediately on my arrival, I passed the stomach tube, with the result that as soon as the end of the tube entered the stomach a flow of foul smelling liquid started without any use of the pump whatever, and this flow continued without interruption until two large wooden candy pails holding approximately 16 quarts had been filled.

Where it all came from I do not know, but I do know that in twenty minutes the horse was apparently all right and received no further treatment and no medicine at all.

Handy to Administer Bulky Medicines

The point I especially wish to emphasize is its use as a vehicle for administering bulky liquids, such as oil. Here in our locality, we are called to treat many cases of colic due to impaction from overloading the intestinal tract with coarse roughage, such as straw, during the winter months of inactivity.

We rely a whole lot on the old treatment of oil, usually a combination of linseed and mineral oils, followed by small doses of arecoline and in obstinate cases, several gallons of saline solution via the stomach tube. As a matter of fact, practically every case of indigestion or colic lasting an hour gets a quart of oil and



Dr. W. B. Davidson, of Windherst, Saskatchewan, Administering Medicine to a Cow Intravenously

in the majority of cases, this starts our treatment.

If we had no other use for the stomach tube than simply to give these bulky medicines through it, it would be worth many times its cost price to us. Personally, I think that a dose of any liquid exceeding eight ounces in bulk can be given most easily and safely in this way. I haven't raised a horse's head to give a drench in four years and hope I shall not have to in the next four. There is absolutely no excuse for it. Any stable man can do that. It probably takes five or six minutes to pass the tube, give a quart of oil or any other medicine, wash up the tube and put it away.

Single Tube Preferable

As for passing the tube, we always use the single type and always pass it through the nostril and seldom ever get a hemorrage. Occasionally this may happen, but usually if it

does, it is in an old horse. I do not recall a hemorrhage in nearly two years and we use the tube in practically every case of colic or indigestion, and I have never seen a hemorrhage that was the least bit alarming. The whole secret of not getting hemorrhages is in keeping the end of the tube pressed well down onto the floor of the nasal passage as it is passed up the nostril.

Diversion to Trachea Easily Prevented

One can tell almost beyond a doubt by the resistance offered whether the tube enters the esophagus or the trachea, but instead of shaking the latter to see if it is right, simply press the fingers of the left hand into the esophageal groove on the left side of the neck behind the trachea, and the thumb on the right side as you pass the tube along with the right hand (I work on the right side of the horse and through the right nostril) and you will always feel the end of the tube when it passes down the esophagus under your hand, nearly always on the left side, but you may occasionally feel it on the right side of the neck under the thumb.

Useful in Tetanus

We had one very bad case of tetanus in our hospital recently, and we used the stomach tube once or twice daily for fifteen days, giving the animal milk, gruel, etc., before the jaws relaxed sufficiently to eat solid food, and we experienced no hemorrhage or difficulty whatever. I have been using the stomach tube continually for nearly eleven years and I have yet to see any bad results whatever from its use.

A. L. DANFORTH.

Watertown, N. Y.

Comment:—The most acute and all around serious case of tetanus we have ever seen recover was one in which a liquid diet was administered daily with a stomach tube, and while there are cases that become a little excited from the first attempt and sometimes there is some difficulty in pushing the tube against the muscular contractures, it is a part of the treatment of tetanus in horses that should never be omitted when the trismus hinders mastication.

The relief of the hunger and thirst and the escape of foul gases from the stomach is so great that many of the poor patients actually wait for these forced rations.

On account of the danger of shock in cases that have been suffering for some hours from colic, it is advisable to empty the contents slowly, when, as in the case related by Danforth, two or three pails of stomach and intestinal contents are evacuated. In these cases it has been our custom to stop the flow by kinking the tube every few moments so as to give the intestinal circulation a little time to react as the pressure is being relieved.

A DECAYED MANDIBULAR MOLAR

Will you please reply to the following query through the columns of the Journal?

I was called to see a colt, three years old, with a history that he could not eat. On examination, I found there was an enlargement on the lower right jawbone, about the size of a goose egg. It was firm, hard and immovable. It felt like a bone.

An examination of the teeth showed them to be normal. The animal was in good flesh. Palpation of the enlargement caused no pain, apparently. The enlargement was in the region of the second and third molars (lower).

Could you suggest some line of treatment.

C. J. C.—North Dakota.

REPLY: Although you may not have found any evidence of dental disease in the mouth, the trouble is nevertheless due to the teeth. Such lumps are very common, especially in three-year-old colts and generally arise from delayed shedding of the third molar.

You should make a very careful examination to note that the cap of this molar has been shed, and if not, extract it. Should you find that the third molar is the permanent one and in the proper position, then you may rest assured that the disease is due to some inflammatory action about the root.

These enlargements in the jaws of colts sometimes recover without extraction, yet it would be well for you to keep watch over this colt, inspecting the mouth from time to time, expecting that evidence of decay will appear; and, in the meantime, blister the enlargement with a binodid of mercury ointment.

The most frequent cause of post-operative pneumonia in domestic animal surgery is embolism and not anesthesia as is generally supposed.

A new testing device, in reality nothing more than the old lactometer, recommended as a substitute for the Babcock tester, was given a trial at the Wisconsin Experiment Station and found to be unreliable.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.

2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 percent formalin solution and sent to the laboratory whole and unopened.

3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.

4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

CHICKEN POX. EPITHELIOMA CONTAGIOSA

I am sending you two three-week-old chicks for examination. They were taken from a flock of one hundred, the last of a hatch of two hundred and sixty. They were kept in the same feed lot in which a number died last spring from bowel trouble. These, however, have shown no pronounced bowel affection, but instead show lesions about the head. Some have a caseous-like tissue in the eyes as in the case of roup. They all eat well until they go blind or die. A number of the half-grown and full-grown birds show the same symptoms, and some of these have died.

I would like a report on the diagnosis and treatment.—J. B. McQ., Ohio.

REPLY:—Microscopic sections made from the chicks sent indicate that they were affected with Epithelioma contagiosa, a diphtheritic disease of chickens due to a filtrable virus. It is also called avian diphtheria.

The handling of a flock with this disease is difficult on the ordinary small farm, because the general prophylactic measures required are seldom carried out. In the first place, the coops and runs must be abandoned until they can be cleaned up, which means cleaned up in reality, properly disinfected and white-washed. Every infected chicken must then be taken away from the flock and quarantined for a long while, because cured cases are carriers for some weeks. It is best to build new runs rather than try to disinfect the old ones, but where the "run" is the whole farm or barn and houseyard, this part of the treatment is, of course, impractical.

Where individual care is assured, local treatment of the lesions is very helpful and will save many of them. Especial care should be taken of those which are blinded from conjunctival discharges and scabs about the eyes, because a blind chicken will starve to death. Antiseptic washes followed by ointments that will keep the affected part softened, can be used to good advantage. Such treatments should be repeated every day until the lesions heal.

JOHNE'S DISEASE IN A BULL

I am sending you under separate cover, blood serum from a short horn bull suspected of having Johne's disease. The bull began to scour last December (1920) and lost flesh. Intestinal antiseptics and astringents were administered without any marked results. After being turned to grass, there was some improvement, but later he began to scour again and then went down entirely. There was no temperature and no pain.

The postmortem examination revealed a typical thickened condition and convolutions of the intestinal mucous membranes found in Johne's disease. The elevations of the mucous membranes were reddened in spots and also studded with hemorrhages and the me-

senteric glands were swollen.—J. C. G., Iowa

REPLY:—The usual acid-fast bacillus of Johne's disease was not found, but this is not a surprise since this organism must be sought in sections or scrapings from the affected mucous membrane, or from fecal matter, preferably the former.

The clinical symptoms and the postmortem lesions described indicate beyond doubt that the bull was affected with the disease you suspected.

Test with avian tuberculin will help to confirm the diagnosis, yet it is by no means 100% efficient. The best medication is sulphate of iron and diluted sulphuric acid, recommended by McFadyean.

GENERALIZED TUBERCULOSIS

I am sending portions of a pig's internal organs for your examination.

I might first state that the herd boar on this farm died some time ago showing the same lesions, but the condition was more generalized. All the internal organs were a mass of lesions.

In that case, I was at a loss to know whether or not it might be tuberculosis and accordingly am forwarding specimens for laboratory diagnosis. I do not doubt that the pig was infected from this boar, although the latter died three or four months ago and no other cases have been observed among the pigs until this one lost flesh and died.—H. B. P., Wisconsin.

REPLY: Tubercle bacilli were found in all of the organs submitted. The pig died from generalized tuberculosis. It would be advisable for you to investigate the cow herd, or the source of whatever milk supply is included in their feed.

HEMORRHAGIC SEPTICEMIA IN A HORSE

The specimens I am sending you under separate cover were taken from a horse, the third one to die in three days, all showing the same symptoms. The specimens are the kidney, blood and stomach contents. All horses mentioned showed symptoms of chronic lead poisoning: Blue discolorations of the gums and all mucous membranes; constipation; lack of co-ordination in gait; subnormal temperature; fast, stringy pulse; spasms and death in about twenty-four hours after the first symptoms appeared.

Reply:—An examination of the specimens sent show unquestionably that your patient died from hemorrhagic septicemia, as there were quite a number of bipolar organisms present.

Chemical analysis failed to show any traces of lead. The bacterial toxins were responsible for the blue gums, incoordination and other symptoms of poisoning you describe.

AGGLUTINATION TEST FOR ABORTION DISEASE

I am mailing a sample of blood from a cow that aborted two weeks ago. As quite a few abortions have occurred on this farm, I am desirous of having the agglutination test made of this specimen.—E. W. N., Illinois

REPLY:—The agglutination test for abortion disease gave a negative reaction, which means that the blood of this particular cow does not contain any immune bodies. A blood test of each one in the herd would be required to give you the desired information.

MAXILLARY ACTINOMYCOSIS IN A VALUABLE COW

The specimen sent you is a section of what I think is an actinomycotic growth. It has been affecting this cow for a year and a half. The growth extended from the region of the eye to the nostril and obstructed the nasal passages on the affected side sufficiently to cause difficulty in breathing.

As she has been a wonderful producer and on semi-official test, it was thought best to carry her through the year, to make her son more valuable as the herd sire, than to take any chances with an operation.

When an examination proved her to be non-pregnant on account of cystic ovaries, she was slaughtered and postmortem examination revealed a large mass occupying the right nasal cavity and pressing over the septum into the left one, so as to cause the difficult breathing. The character of the growth throughout was the same as that of the section submitted to you.

It seems that total ablation would have required an opening 6 to 8 inches in diameter. I would like your opinion as to the nature of the growth, thinking it might be a sarcoma. —C. L. B., Maine.

REPLY:—The examination proves the tumor to be an actinomycoma. The invasion was too extensive for successful surgical intervention.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D.V.S.

SEPTICEMIC ERYSIPELAS IN FOWL[1]

At the Veterinary Institute of the University of Leipzig out of a total of 1,300 autopsies on fouls during the years 1919 and 1920, erysipelas bacilli were demonstrated in three cases to be the cause of poultry diseases. In two instances in ducks and once in a turkey hen. The isolated poultry erysipelas bacilli were recognized as true erysipelas bacilli which while possessing a somewhat higher virulence for white mice than the true swine erysipelas bacilli and a somewhat slighter agglutination titer on comparative tests, yet in all its other characteristics the identity was established. In both cases of the infection in the ducks, the birds had abundant opportunity to eat putrid organic substances, in which it is well known that true erysipelas bacilli as well as the related Koch's mouse septicemia bacilli find favorable conditions for their propogation. The author recommends for the control of erysipelas in poultry the vaccination of the birds with swine erysipelas serum in doses from 0.5 to 1cc.

INVESTIGATIONS OF BLACKLEG BACTERIA[2]

Inasmuch as the blackleg bacillus may also participate in the production of gas gangrene in man, therefore, the subject of blackleg becomes of greater importance in human medicine. In order to determine to what extent other anaerobes than typical blackleg bacilli are associated with spontaneous blackleg in young cattle, the author investigated fifteen different strains of blackleg and for control purposes seven other types of anaerobes. The blackleg strains were obtained from blackleg material of the Alpine regions of Switzerland and Austria and some were procured from various institutes. The examination included the study of the cultural and pathogenic characteristics of the cultures, as well as to their immunizing properties. The results established that the cause of blackleg in cattle is almost invariably a species of bacterium which is characterized by more or less well defined biological properties and should be considered therefore as the typical blackleg bacillus. Aside from this other anerobic organisms are occasionally met with in cases of true blackleg and some of the cultures obtained from institutes belonged to this group. They proved to represent the causes of malignanto edema or representatives of the group of putrefactive organisms. However, it was not established whether they may be responsible for blackleg in animals or whether they only play a part as mixed infections. No definite proof could be obtained during the investigation of the material whether spontaneous blackleg of cattle may be caused by two different organisms or even by a larger number of various anaerobes as is the case in gas gangrene of man.

COITAL STRANGLES[3]

Numerous mares following breeding manifested inflammatory conditions which gave rise to a suspicion of dourine infection. The searching examinations of the author excluded dourine and coital exanthema. It has further been established that the great majority of the affected animals were covered by stallions from a stud in which strangles prevailed. In view of the clinical findings, the post mortem examination, the bacteriological findings and animal inoculations, the diagnosis of strangles was established in two affected mares. The following conclusions were established in connection with this condition:

In mares which were covered by stallions affected with strangles, pustular and erosive changes develop in the region of the vulva, more rarely on the posterior mucous membrane of the vagina. At times extensive oedematous swellings may be observed in the region of the vulva and rump in which later deep abscesses may develop. The latter may penetrate up to the spinal canal resulting in severe phlegmons and paralysis with fatal termination. In the pus of the affected mares the streptococcus equi has been demonstrated. The infection is probably conveyed by the stallion infected with strangles either by transmittal of the nasal and buccal discharge to the

female genital organs or by transmission from the penis to the vaginal mucous membrane.

The author recommends the name of coital strangles for the effection in mares. Colts on the same premises where coital strangles occurs become affected with typical strangles. Stallions suspected of being affected with strangles should not be used for breeding purposes.

INFECTIONS OF POULTRY WITH CHICKEN TYPHUS. (TYPHOSE AVIARE)[4]

The author is of the opinion that various chicken diseases are designated as chicken cholera in which the cause and the character of the disease varies; true chicken cholera occurs much more rarely than is generally accepted. In France at the present time there exists among chickens a very severe enzootic. The disease is spread over the entire country. The author examined 67 blood samples from affected and also from recently dead birds, and succeeded in demonstrating the avoid chicken cholera organism only in a single case. In 56 cases he found the bacillus sanguinarium (Moore); in 7 cases the blood was aseptic, although it originated from chicken flocks in which the disease caused great losses. Chicken pest could be excluded from the fact that experimentally the samples proved avirulent.

Chicken typhus was first studied in the United States; Moore described the bacillus sanguinarium as the causative agent. The disease is supposed to similate the typhous-like affections of man; the blood and the excreta are virulent. The disease raged in France since the Spring of 1916. It has probably been introduced with American horse transports. It rapidly spread over the entire country and attained an enzootic character. In outbreaks of the infection the chicken owners are compelled to slaughter their flocks.

THE INTRAPALPEBRAL TEST IN TUBERCULOSIS IN CATTLE[5]

Based on very extensive investigations the author concludes that the intrapalpebral tuberculin reaction on the lower eyelid offers means for the diagnosis of tuberculosis in cattle, but at the same time it possesses no advantages over the old tuberculin eye test. The results from both of these methods are very much the same. The older method is simpler in its execution and the results may be more readily observed. Introduction of the tuberculin into the eye, therefore, should be preferred to the injection into the eye lid.

THE TRANSMISSION OF PATHOGENIC ORGANISMS BY FLIES; TECHNIC OF ASEPTIC CULTIVATION[6]

Investigations as to the part the flies play in the transmission of pathogenic germs are accompanied by great difficulties. This is due to the fact that flies invariably harbor bacteria. The isolation of any causative agent of disease from them is tedious and accidental and is practically impossible for the bacteria of the typhous and paratyphous group. Even under normal conditions bacilli are found in flies which similate the organisms of those groups and which may be distinguished from them only by serological tests. Due to this fact the author attempted to raise flies in an aseptic manner. Flies may take up infectious germs as fully mature insects or in their larval state if their development occurs in surroundings in which the pathogenic organisms are present.

The author conducted investigations on larva of the meat fly (Calliphora vomitoria); also on the green flies (Lucilia cesar) and on the house fly. The larva which originated from aseptic eggs were infected with tubercle bacilli, dysentery bacilli and typhous bacilli. In all cases the flies which were hatched from sterile pupas proved aseptic. Pathogenic organisms which were placed in the larva have not passed into the fully developed insect. In practice, however, the fly might become infected with the organisms which are lodged on the surface of the pupa. Investigations with fully developed insects were carried out only with the house fly. They proved that the infected flies retained the infectious agents only for a few days. If they are removed from the source of infection they free themselves very rapidly from the infectious agents, probably in a mechanical way.

Barley water made by adding boiling water to finely ground barley is a splendid exclusive diet for scouring calves. To tempt a calf with a poor appetite, milk may be added. Barley water and milk is very soothing to the intestinal mucous membrane, and it prevents the formation of curds.—Frost and Varley.

1. Prof. A. Eber, (Deut. Tier. Woch, No. 24, 1921).
2. Dr. Y. Uchimure (Deut. Med. Woch, 1921, P. 738).
3. Prof. H. Miessner, (Deut. Tier. Woch, No. 32, 1921).
4. D'Herelle, (Rev. Gen. de Med. Vet. March 1920).
5. R. Breithor (Inaug. Dissert., Berlin, 1921).
6. E. Wollman, (Compt. rend. de L'acad. des Sciences, Vol. 172).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

The College Course in Veterinary Parasitology

IT will probably be conceded by most American veterinarians that there is no topic in veterinary medicine concerning which the veterinarian is less informed than the subject of parasitology. He is baffled by the scientific names of parasites, bewildered by the changes in these names, unacquainted with many of the parasites he sees, and unfamiliar with the life histories of many parasites. As a result he is handicapped in the important matters of diagnosis, treatment and prophylaxis on which his competence, satisfaction and income depend in the practice of his profession, whenever he deals with parasitic conditions. This is not the fault of the veterinarian or of the veterinary colleges. It is the natural and inevitable historical result of past and present conditions in this country.

Bacteriology and Parasitology

Since the establishment of the comparatively new science of bacteriology, the engaging study of bacteria and of diseases caused by them has dominated the attention of the veterinarians more or less to the exclusion of the study of animal parasites. The diseases due to bacteria and the filtrable viruses are spectacular and demand attention. The ravages of hog cholera, striking quick death throughout a herd of swine, are not to be overlooked. Anthrax, black-leg, foot-and-mouth disease and kindred diseases have a sudden onset and take a prompt toll from which the stockmen clamor to be relieved. That the offending organisms are not seen only serves to put them in the category of the mysterious and, therefore, terrible.

The animal parasites are not so spectacular. They take their largest toll among young animals, and the loss is readily explained by the stockman to his own satisfaction on other grounds. The infant animal has no long previous record of established vitality and strength to make the stockman inquire closely as to why this animal should die. The loss is put down to lack of vitality, inherent weakness or some other plausible cause. There is no warning rise in temperature and there are few sudden deaths. The lack of a febrile condition inclines one to think that the animal is not sick—it is merely unthrifty. The lack of thrift and the loss of condition may extend over long periods and establish the idea that the animal in question is a weakling. When it finally succumbs to the long siege by the parasites present, no explanation of the death appears necessary. The animal "never did well" and the loss is discounted in advance. The parasites themselves are so common that they too are discounted. They are often noticed and the idea is established that all animals have them—perfectly healthy, normal animals as well as the unthrifty. This has been the prevailing idea.

We are beginning to understand the situation better and to realize what animal parasites do, what unthriftiness means, and what parasitism costs in terms of diminished meat and milk production, poorer quality of meat, decreased horse power, increased susceptibility to bacterial and constitutional diseases, and premature deaths.

The Veterinary Colleges

With the growing appreciation of the importance of parasitology, we are taking stock of our preparation for dealing with parasites and parasitic diseases. This stock-taking reveals the fact that we are by no means bankrupt, but it also shows that some of our assets are not what they might be, and we might add, with Mister Dooley, "moreover, they never were." In the field of research in veterinary parasitology this country has a record of accomplishment of which it need not be ashamed The investigations in the Bureau of Animal Industry have been of a high order. The work of Smith and Kilborne on the tick transmission of Texas fever constitutes one of the great pioneer achievements in the field of medicine in general. Stiles was in the Bureau of Animal Industry when he found that the

common hookworm of man in this country was a new species. The important researches by Ransom do not suffer by comparison with the achievements of workers elsewhere in veterinary parasitology. It is worth noting, however, that of the men named above, only one, Kilborne, is a veterinarian. A number of veterinarians outside of the bureau, such as Law, Dalrymple, Francis, Cary and others, have done important work in the field of veterinary parasitology, but only as a part of their many and varied activities.

For the most part, parasitology in this country has been neglected by the American veterinarian and regarded as a minor and comparatively unimportant topic by our veterinary colleges. Any member of the teaching staff who was willing to teach this subject was welcome to do so. If there were no volunteers, the work was, in the current slang, "wished onto" any one available. The sacrificial goat could volunteer or be drafted; someone must teach parasitology, not because of its interest and importance, but to avoid leaving a gap in the curriculum. The result was almost inevitable. With such rare exceptions as Leidy, who taught parasitology to veterinary students at the University of Pennsylvania, the men who taught parasitology were not parasitologists and did not claim to be parasitologists.

Anatomists like Sisson taught anatomy, physiologists like Fish taught physiology, pathologists like Burnett, Crocker, Kinsley, Goldberg and Hallman taught pathology, bacteriologists like Moore and Fitch taught bacteriology, and surgeons like Williams, Adams and Merillat, taught surgery, but anyone who would or must taught parasitology.

The Parasitologist

These teachers of parasitology were heavily handicapped. They had not had special training or experience in parasitology. There were no adequate texts or reference books and they did not have the extensive libraries of parasitological literature which were necessary to compensate for the lack of comprehensive reference books. They were in a field in which discoveries of major importance were being made at a rapid rate. In this sea of change they had no map or compass by which to steer. There was little to do except to anchor at a few apparently safe ports, and in many cases these ports were being blown up by the research workers in parasitology.

The field of parasitology has been but little exploited in this country and it offers large returns to the investigator. But it is a field which demands adequate preparation for its exploitation, as does any other field in veterinary medicine. Adequate technique is always essential in any field. The surgeon must have the surgeon's knowledge of anatomy, his eye and hand and nerve, to be a surgeon. A liking for the work is essential to success.

The veterinary parasitologist must combine with his knowledge of veterinary medicine a sound knowledge of zoology and a special knowledge of veterinary helminthology, entomology and protozoology if he is to teach effectively. Unfortunately, zoology has suffered with parasitology from the neglect of the veterinary profession in the United States. If we are to raise up parasitologists among our veterinary students, we must have the inspiration of teachers of parasitology who are enthusiastic parasitologists. Good teachers of surgery inspire students to become surgeons; it is the exceptional man who leaves a poor course in surgery fired with a determination to be a surgeon.

The Course in Parasitology

The course in parasitology should fit a veterinarian for the work he is to do. The following suggestions represent what may be aimed at and perhaps attained at some time in the future.

The veterinary student in parasitology should be taught to examine all the common domesticated animals for external parasites. He should be taught correct methods of making scrapings and examining them for mange mites. The only way to teach him to do these things is to have him do them, not once but many times. The parasites he finds he should identify by consulting the literature, precisely as he would do if in practice. He should conduct postmortem examinations, using suitable technique, on all the common domesticated animals, collecting the parasites present and identifying them, so far as possible, by reference to the literature. He should make examinations of the feces of all the common domesticated animals and, so far as possible, determine the parasites present from the eggs, cysts and other parasitic material present in the feces.

We learn by doing. The mental effort involved in doing a thing the first time is less for the student than for the older man who has ceased to be a student. It is easier and better to do a thing for the first time under competent guidance and under satisfactory

laboratory conditions than to do it the first time alone, unaided and unadvised, under field conditions in practice under the eyes of a critical, and sometimes suspicious, client. The things that have been done repeatedly are the things we find easy to do again.

Laboratory Training Essential

The course in parasitology should be primarily a laboratory course. It should be supplemented by lectures in order that the student may be oriented in the field and that what he finds may take its proper place in the orderly scheme of the science of parasitology. The lecture course is necessary in order that the student may properly evaluate what he finds in the laboratory, and, later, in the field, that he may not mistake the commonplace for the new or the new for the commonplace. But the veterinarian must be given laboratry training if he is to feel sure of himself in practice when he is confronted with a problem in parasitology. A mere lecture course absorbed by the student in college is most easily utilized by the practitioner in conversation; words beget words. But these words are not easily translated into action. Words are of value in treating the client, but of little value in treating the patient, and our worth to the community depends on the actual results obtained with our patients. The thing the student has done often and well in the laboratory will present few difficulties in practice, as a rule.

Prospects

It will be objected that such a course takes too much time. It need not. It can be correlated, and should be correlated, with the work in anatomy and pathology. It will be said that the necessary literature for accurate identification of parasites is not available in our colleges. This argument has some weight. But the literature is much less available to the practitioner in the field. Make the identifications as exact as possible. What we can not do today we can do tomorrow, and beyond tomorrow there are other days ahead. Meanwhile we can get on the right track and start. Slow progress in the right direction is better than no progress or a trip in the wrong direction. It must not be inferred that nothing that is suggested here is being done in the American veterinary colleges. Something is being done. More should be done and will be done. The need exists for veterinarians who have a sound working knowledge of parasitology. As we come to realize the extent of this need, we shall find men to supply the demand. The number of men who are interested in this field has increased immensely in the last ten years. The interest is manifest at our veterinary meetings. The needed improvements may be confidently expected in due season.

ROUND WORMS IN SMALL ANIMALS

By O. V. Brumley

Round worms are quite common in dogs and cats, especially in puppies and kittens two or three months old. Fully 50 to 75 per cent are infested. In one animal ten to thirty parasites are usually present; eighty were found in one subject.

Require No Intermediate Host

Round worms do not require an intermediate host to complete their life cycle as do the taenia. The ova deposited by the adult worm with the feces are passed out, and in warm, damp ground or in other suitable places undergo certain changes, leading to the formation of the embryos. Such changes may occupy a few days to several weeks, depending upon the conditions of moisture and temperature. The embryos when ingested by their particular host, rapidly develop into the adult parasite. Puppies and kittens become infested as soon as they begin nursing, provided these parasites are present in the mother or other animals in the kennel. The adult worms pass a large number of ova continuously, and embryos present in infected soil adhere to the mammary glands and are swallowed by the young while nursing.

Nematodes Not Common in Birds

Birds are not as commonly affected with round worms as dogs, and as a rule they harbor only a few specimens. Occasionally, however, round worms are found in birds in large enough numbers, particularly in localities where this form of parasitism may be enzootic. Pigeons are the common victims; in some cases whole flocks succumb to the infestation.

Symptoms of Nematode Infestation

Puppies and kittens when infested show symptoms of inanition at three to five weeks of age. They are stupid and do not play as such animals usually do at this age.

Vomition is common and quite often some of the parasites are thus expelled. Emaciation increases, the mucous membranes are anemic, and the abdomen appears enlarged (pot bellied). Diarrhea is not uncommon, often alternating with constipation.

Quite frequently the patients, especially kittens, show epileptiform or rabiform symptoms. These are probably due to the irritation of the nervous system produced by toxins excreted by the parasites as well as by the irritation of the intestines.

These symptoms gradually become more severe, and finally food is refused, followed by weakness, coma and death in 5 to 8 weeks. The temperature is only slightly elevated in the early stages, later as coma comes on it is subnormal.

In mild cases or in older dogs the symptoms are less pronounced and often unnoticed. The appetite remains good, often voracious, but the general condition is not good; the hair coat is dull and rough and growth is impaired.

Young birds infested with round worms show diarrhea, emaciation and depression and finally die. In older birds the condition becomes chronic with marked emaciation.

Therapeutics of Round Worms

It is advisable to administer a vermicide to all puppies and kittens when three to five weeks of age, and repeat every two to four weeks until several months old.

Treatment should be given as soon as symptoms appear. Santonin (puppies 0.016; small dogs 0.05-0.2; large dogs 0.2-5; kittens 0.008-0.025; cats 0.06-0.2) is the most efficient agent used to remove the ascaridae. It is best administered in small doses, repeated for three or four days, then in a single large dose. This is especially true for all young animals, as they are very susceptible to the toxic action of this drug. Older animals are rarely affected even with enormous doses.

Posology and Administration

Santonin may be administered in castor oil in sufficient amount to produce catharsis, or the oil may be given an hour or two later. Tablets of **santonin and calomel** of various proportions may be had and are convenient to use with the food. Other anthelmintics are employed with good results, such as **areca nut powder** (dogs 0.5-4.0; cats 0.1-2.0) which is easily given with milk; **benzine** (1.0-7.0 in oil); lamala (2.0-?.0). Birds may be treated with areca nut powder (chickens 3.00, pigeons 1.00 each) mixed with moist ground feed. Oil of anise (0.4-0.8) or benzine (0.2-0.6) in castor oil has been used with good results.

Nematode Prophylaxis

In order to raise young animals free from these parasites energetic measures must be directed toward the removal of all ascaridae from the older animals and a thorough disinfection of all the premises to which they have access. This is best done in the early winter, the weather conditions at this time being unfavorable to their development.

Frequent examinations of the feces should be made and treatment applied when necessary. All additions to the kennel or flock should be examined and treated before being allowed with the other animals or birds.

Pregnant animals should be entirely freed of all parasites, and thoroughly washed to remove all ova or embryos that may be on the hair or skin. Afterwards remove to a clean place that has not been used for animals for some time where the mother and young should be kept for several weeks.

The feed and water, and all receptacles must not be permitted to be soiled by other animals which harbor parasites. In this way it is possible to rear puppies, kittens or birds without experiencing the trouble with parasites.

ASCARIDIASIS OF THE PLACENTA OF A COW

On Sept. 15, I was called to attend a case of obstetrics in a Jersey cow, six years old. On examination I found the knees presented with head turned down on the sternum. The calf was dead. It was eleven days premature.

I delivered the calf without much trouble at about 11:00 A. M., and 4:00 P. M. the same day the placental membrane passed all right, but it was found to contain fifty to one hundred white worms from 1½ inches to two inches in length, and about as large as a medium darning needle.

There is nothing unusual about the obstetrics, but what about the worms? Have practiced for twenty-five years, and never met with a case like this before. The cow is doing fine. —W. J. R., Ill.

REPLY—We are unable to find anyone who has seen or heard of parallel cases of worm infestation. The report is indeed interesting as well as apparently unique, although Hall has stated in a recent issue of VETERINARY MEDICINE that the reproductive organs "may sometimes" harbor parasites. There is, however, the one chance that the placenta after being expelled or while still hanging from the vagina was soiled with feces containing helminths.

Zootechnics

Edited by E. MERILLAT, Physiological Processes and W. J. MARTIN, Husbandry

The High-Grade Milk Industry

WHILE the demand for a grade of milk higher than the common market variety is probably increasing, there is, unfortunately, a remarkable indifference as to its superior merits on the part of the consuming public. In the sale of milk, as in most all food products, it is the sense of sight rather than the nutritive value that governs the demand. A food well displayed is easily sold, no matter what its merits might be, while one badly displayed, despite its nutritive qualities and healthfulness, goes begging for a market.

The Public Easily Deceived.

A clean dairy barn, tuberculin tested cows, clean milkers, clean utensils, an inviting pasteurizing plant, a nicely appointed milk wagon driven by a uniformed driver and a clean looking, securely capped milk bottle constitute a formidable aggregation, but if the sum total of the product of this complicated system is nothing more than a costly modified milk extracted of much of its nutritious elements, it is obvious that the ancient system with all of its imperfections but which assured whole milk to the consumer and a reasonable return to the producer, had some redeeming features. It at least yielded the consumer milk that tested from 3% to 5% butter fat, whole and unmodified by any artificial process; and if the bacterial count was high the same may be said of much of the product of the new system wherein pasteurization is only a sham and the other precautions but outward pretenses, and wherein the producer is ill-paid, the consumer overcharged and the system of distribution exacts the big toll.

The Supply of Better Milk Will Meet the Demand

The improvement in market milk over that of former years has not come about through any spontaneous desire of the consuming public, but through the co-operation of the public health service and the producers. The public in general had stood by unconcerned, contending nothing except by feeble complaints about the butter-fat content.

Although there are everywhere both small and larger producers willing to improve their methods of production in order to increase the income from their herds, the public has given them but little encouragement by its steadfast notion that any white looking liquid delivered in a neat package is good enough, complaining about nothing except the low cream content and sometimes about its tendency to sour so soon after delivery. The matter of cleanliness and low bacterial count has not entered into their indifferent deliberations. Although the same sermon has often been preached it is always worth repeating that when the public demands better milk it may rest assured of an abundant supply from an industry that is only awaiting the call.

Certified Milk In No Great Demand

In 1920 an inquiry made into the demand for certified milk in a city of almost a million inhabitants brought information from a reliable source that there were only eighteen families demanding such milk. At the same time in a city of over two hundred thousand no certified milk was being sold. These cities are located amid a farming district exploited by farmers, many of whom are just begging for an opportunity to furnish such a product or at least a product of a higher grade than the common market milk. There is no way by which these producers can with any assurance of adequate returns for their trouble and expense, either individually or collectively, create a market for the kind of milk they are anxious to produce. The uncertainty of the whims of mankind forbids because the resources for such campaigns of education are too limited.

The Veterinarian Is Seriously Concerned

Higher grade milk means more veterinary service. It means better stables, better care, better regimen, better breeding, and an all-

around better attention to the little infirmities which make professional services successful to the practitioner and profitable to the dairyman. It will strengthen the industry financially and improve the wealth of the nation and the health of its population. It will popularize milk as food to the decided advantage of all concerned. It will decrease the mortality of infants and supply their nutritive needs, and will impose a higher scientific and moral significance to veterinary inspection and service.

AN UNBALANCED RATION THE PROBABLE CAUSE

The specimens sent under separate cover are from a number of organs taken from a 50 pound pig immediately after death. The pig belonged to a herd of seventy head, a number of which had previously died showing similar symptoms. The owner raises about one hundred and fifty head spring and fall and always has them given the virus and serum treatment at the age of 6 weeks to 2 months.

The veterinarian who had treated the herd for several years had such bad luck that I was called with the hope of improving matters. This departure, however, was a disappointment, since 10% to 15% of my cases died. The postmortem examination showed no lesions, parasites or any other visible causes to which the fatalities could be attributed. A representative of the Bureau of Animal Industry assisted at two of the autopsies and found nothing more than a number of anemic and congested areas along the intestinal tract, and cloudy degeneration of the liver.

The sick pigs show a staring coat and arched back, but no weakness until the third week. There is no elevation of temperature and none recover.

The feed consists of corn and oats chopped and skimmed milk right from the separater. They have access to the manure of the cow stable.—J. B. McG., Ohio

REPLY:—From the fact that no pathogenic organisms were found in any of the numerous organs examined and that the food allowance is far from a balanced ration for the growing pigs, we are inclined to believe a radical change in the regimen should be made. Corn and oats chop with the limited amount of skimmed milk that a small dairy herd is able to supply to so many pigs does not meet the requirements. Then there seems to be no provision made for minerals, salt, or sufficient protein.

Feed these pigs coarse ground shelled corn and oats, middlings, tankage and some minerals, each in a separate compartment of the self-feeders and distribute the skimmed milk so that each one of them will get a proper share. Where the ration is not well balanced or where it lacks in quantity, pigs always eat entirely too much cow manure.

Except for horses, unground oats is not a good feed. For cows and pigs it should be ground, for chickens it should be sprouted for winter feeding.

Oats sheaves stacked in the open is a dangerous feed for horses when the bottom of the stack is reached. Outbreaks of botulism often occur from this source.

One of the chief demands of the milk consuming public in the present situation is milk that will remain sweet for 24 to 36 hours after delivery. To meet this, the dairyman's problem is control of bacteria.

Somewhere enroute between the producer and the consumer, milk undergoes a great physical change. At the producer's it must test 3.5% butter fat, while at the consumer's the cream at the top of the milk bottle is but a pellicle.

Potato Silage for Hogs

When potatoes are cheap, when there are lots of unmarketable culls, or when there is a surplus in the spring, they can be made into a valuable food product in the form of ensilage. The silo for this purpose is a barrel or as many barrels as may be needed. The potatoes are cut up with an ordinary cutter into small pieces and put into the barrels mixed with a little fermented corn meal. The fermentation of the meal is necessary because potatoes do not ferment alone. From 2% to 5% of corn meal is all that is necessary. The meal is placed in an open tub soaked with warm water and allowed to stand several days until the mash begins to ferment. The potatoes and mash are then put into the barrels in alternate layers and covered up. As the mass settles it is covered with chaff to keep out the air. In three weeks it is ready for use. It is also a good feed for cows.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.
Professor of Botany, Iowa State College, Ames, Ia.

Ergotism

ERGOT is a parasitic fungus common upon rye, barley, wheat and oats. The sclerotium varies from one-eighth to one inch, is more or less cylindrical, generally somewhat curved and wrinkled, purplish without and white within. This is the part of the fungus which is poisonous. The technical name of the fungus is **Claviceps purpurea.** Ergot is especially common upon such wild grasses as quack, wild rye, red top and timothy, and is especially poisonous to livestock. The cases of poisoning in the human family are less frequent. Cases of its criminal use are not frequent, although there are such cases on record.

Contains Several Toxic Agents

Ergot contains a number of toxic substances in addition to the fungus sugar micose. In addition to **ecbolin cornutin** and **ergotin,** there are present certain organic acids like **ergotinin,** and some toxic substances like **secalinotoxin** and others.

Some quite recent work has been done on the substances in ergot by Dale, Barger and Carr. According to these investigators cornutin, as such, does not occur in ergot but is an artificial decomposition. Barger and Carr isolate **ergotoxin** as a substance of great physiological potency. This substance not only causes the characteristic reaction of ergot but also gangrene. Enormous single doses of ergot are required to poison animals or man. According to Dr. Winslow three ounces have produced fatal poisoning in dogs.

Symptoms of Ergotism

Acute poisoning is characterized by vomiting (in dogs) profuse salivation, dilation of the pupils, rapid breathing and frequent pulse. Chronic poisoning or ergotism rarely occurs in animals owing to continuous ingestion of ergotized grains. Nausea, vomiting, colic, diarrhea or constipation, and abortion ensues in pregnant animals. In addition to gastro-intestinal irritation the symptoms naturally assume two forms, first the gangrenous form, and second the spasmodic form.

In the first variety of ergotism there are coldness and anesthesia of the extremities, including the feet, ears, and tail of quadrupeds; the comb, tongue and beak of birds, followed by the appearance of passive congestion, blebs and dry gangrene in the vicinity of these parts. The hoofs and beaks often drop off. Death ensues from general exhaustion. In the spasmodic form are seen toxic contraction of the flexor tendons of the limbs and anesthesia of the extremities; muscular trembling and general tetanic spasm, with opisthotonos, convulsions and delirium. Death also occurs from asthenia.

The Two Forms

There are two forms of ergotism in animals; the nervous type and the gangrenous. Ergot stimulates the nerve centers that cause the contraction of the small blood vessels and causes one of the two forms of ergotism. In the nervous form the contraction of the small blood vessels of the brain produces dullness and depression, and in the gangrenous form causes the loss of a part or of all the limb below the knee or hock, the tail or the ears or by the formation of ulcers at the top of the hoof or between the toes. This form of ergotism occurs where it is used in medicine causing a contraction of the uterus.

POISON IVY AND HORSETAIL

Mr. Albert A. Hansen of the Extension Department of Pennsylvania State College has issued a series of ten leaflets on weeds, one of which is on poison ivy and one on horsetail, touching on the poisonous nature of these plants. Mr. Hansen states that when cattle eat horsetail in large quantities, scouring is apt to result, the symptoms of poisoning being similar to blind staggers. The disease **Equisetum** is said to occur in Jefferson county, Pennsylvania.

Poison ivy is said to occur in every county in Pennsylvania where suspected cases of poison ivy poisoning occurs. "Wash immedi-

ately with cheap laundry soap" because this cheap soap contains the alkali necessary to be effective in destroying the poisoning from poison ivy. "A strong solution of cooking soda (bicarbonate of soda) may also be used."

These bulletins can no doubt be obtained by writing to Prof. M. S. McDowell, Director, State College, Pennsylvania.

DIFFERENTIATION BETWEEN WILD AND CULTIVATED PLANTS

Mr. H. E. Swain of New Haven, Conn., sends the following interesting letter:

"Have recently had occasion to use your book 'A Manual of Poisonous Plants' and found it to be the most wonderful and comprehensive piece of work on the subject that I have ever seen, which has prompted me to write and ask for further help.

"I have been endeavoring for some time past to find an answer to the following questions, but so far without success: (1) Are there any plants of a toxic variety which so closely resemble the edible domestic vegetables and fruits, that they might easily be eaten by mistake? Or are all poisonous fruits and vegetables so radically different that a casual observation would be sufficient to distinguish them from edibles?

"(2) If there are any of the toxic variety that do so closely resemble our domestic plants that they might be eaten by mistake, which ones of the domestic type do they so closely resemble?

"I have frequently read of cases of serious consequence that have arisen and wondered whether it was due to the profound ignorance of the individual and his stupidity, or if it was a perfectly natural mistake.

"These questions remain unaswered in my mind and as I am very desirous of getting this information, and knowing that you are doubtless best qualified to answer them, I am appealing to you for the assistance or for any advice that you might care to give me as to where and how I may obtain this information."

Some Difficult to Differentiate

In answer to the first question, one of the best illustrations is the bitter almond. Not even an expert can tell the difference between the plants, except by taste. Poisonous toadstools, at least some that are not always markedly poisonous are easily mistaken from the edible. As a matter of fact unless one knows these species it is better to leave so-called mushrooms alone. The expert can, of course, tell these. A plant may, however, be poisonous to one and not to another.

Cowbane and Cultivated Parsnip

As to the second question, frequent cases of poisoning are reported from cowbane and there is really no reason for this. The roots of both plants are fleshy. The cultivated parsnip has a conical root and the cowbane a fleshy root. The odor also is different. The cowbane has a very pungent odor and the parsnip sweetish, the parsnip has yellow flowers and the cowbane white. There is really no reason for mistaking these plants. If you admit, which I do not, that the fernal parsnip (with yellow flowers) is poisonous, there surely would be no way of telling one from the other. The cultivated parsnip according to my observations, is not poisonous. Take another illustration, the poisonous hemlock has white flowers, resembling many other plants of this family, but the odor is characteristic. I can well see how a layman might make a mistake in identifying these injurious plants. I think many cases of poisoning are perfectly natural.

Animals Discriminate Better Than Man

It is of interest to note in this connection that certain types of animals do distinguish differences better than does man. This is said to be the case of the cow which readily eats one kind of plaintain and does not eat the other.

MOLDY CORN AGAIN

Mr. G. P. Plaisance in charge of the research department of a milling concern in St. Louis, Mo., has written me as follows:

"We have been finding a lot of damaged corn on the market this year, part of which has been caused by ear worm and part by molding. It has been rumored that this damaged corn is injurious to livestock and that it has resulted in considerable loss to the feeders.

"Is this rumor justly founded? Have you had any experience or have you heard of anybody who has had experience wherein the damaged corn of the present season has caused injury to livestock?"

Permit me to say moldy corn of the grade I have seen should not be used, at least, for horses and cattle. I do not think all the molds found on corn are injurious to livestock, but I do think some species produce toxic substances which are more or less injurious, so the rumor is correct.

Canine Feline and Avian Practice

External Parasites

By O. V. Brumley

Small diseased areas and the larger parasites, if not very numerous, may easily be overlooked in long haired individuals and feathered animals.

The Microscope Often Necessary

In the majority of cases a microscopic examination is necessary to determine if a skin disease is parasitic or non-parasitic. If the former, it is necessary to identify the parasite in order to give the proper prognosis and treatment.

Some few cases present certain rather characteristic features which indicate the real nature of the disease but the only accurate diagnostic method is by the use of the microscope. The larger parasites may be identified with a reading glass, the mange mites can be seen with a microscope, using low power, while high power is necessary to identify some of the vegetable forms.

Microscopic Examination

With a small, sharp curette, scrape deeply into the skin at a point where the disease process is active until a mass of moist scrapings the size of a grain of wheat is obtained. Transfer this mass directly to a slide and moisten it with a drop of water. Put on a cover glass and press down with a rotary motion to evenly distribute the material to the proper density.

By this method animal parasites remain active, and their movements readily indicate their presence.

For vegetable parasites in addition to the scrapings pluck a tuft of hair at the edge of the diseased area and mount as above. Examine with high power for the fungus along the hair near the roots. If the scrapings are to be examined later, secure a larger amount and put in a clean vial or ointment box.

Smear slides can not be made with this very well after it has dried. Usually it is best to boil it slightly in a 10 per cent solution of KOH. Centrifuge it and withdraw some material from near the bottom with a pipette and mount with cover glass.

Dandruff

The disease occurs chiefly on the upper surface of the body especially on the neck, under the collar and along the back. The hair coat is dull and dry and the skin is covered with small grayish-white scales or dust. Itching is sometimes present.

Treatment

Good nourishment is necessary if digestive disturbances are suspected as the indirect cause. Internal treatment with digestive tonics especially preparations containing arsenic for its action on the skin. The external treatment consists in cleaning applications with alkaline solution (sodium carbonate 2%) and applications of salicylic ointment (10%). A solution of resorcin (5%) is very satisfactory as it does not soil the hair coat, nor cause dirt to adhere to it.

It is best to clip the hair and brush the skin well before medicinal treatment is begun, and thereafter at frequent intervals.

Eczema

Symptoms—The early stages appear as an ordinary dermatitis progressing through the various stages of inflammation until the pustular eruptions occur. Recovery may occur spontaneously at this time, or with proper treatment, but if not it passes on to the eczematous stage.

Pustules continue to form and discharge their contents often unnoticed, under the long hair and crusts. If sufficient to keep the skin moist it is commonly classed as weeping eczema.

The itching is intense and the frequent scratching, biting or rubbing removes the matted hair and crusts leaving a raw bleeding surface. The skin lesions may occur in one or more small areas or over a gradually increasing large surface. In consequence of continued efforts to relieve the itching by licking and scratching, the inflammation extends

into the deeper layers of the skin.

Healing occurs in three or four weeks with recurrence of the condition. The skin becomes thickened and fissured, and bleeds easily. Scales continue to form on these partly healed areas. Some of the hair bulbs atrophy or are destroyed and only a partial growth of hair reappears on the surface.

A recurrence of the condition each succeeding summer is quite common in well fed house pets especially among well bred dogs with fine skins, as the poodle.

The Treatment of Eczema

Carefully cleanse the affected parts, remove all the crusts and scabs possible, and clip any hair that may be over the part and for some distance around the margin. Mild soap may be used for washing, also alkaline solution (sodium carbonate 5%).

Upon the condition of the skin further treatment depends. If the surface is moist, drying powders can be used, such as **talcum, zinc oxide,** or **boric acid.** Liquid preparations of **lead** and **zinc** (Burrow's solution) are also very good.

Proper internal treatment is important in all cases of eczema as marked improvement has been shown by this form of treatment alone. Mild purgatives, especially **calomel** (1 to 2 gr.), for its antiseptic action repeated at two to three day intervals is of value. **Fowler's solution** (3 to 10 drops) daily for dogs gives the best general results and should be continued for a long time. **Calcium chlorate** (15 to 30 grs.) in solution daily acts to relieve the itching. A good diet of easily digested, non-irritating foods is essential.

(8) Scabies, Mange, Red Mange, Iitch

Etiology—Two kinds of mites, the sarcoptes and the demodex, are the chief ones found on small animals. They are quite small and can only be recognized when highly magnified.

Symptoms

Sarcoptes mite of the dog (Sarcoptes scabiei, variety canis.) This is the common mite found on the dog. Sarcoptic scabies may appear on any part of the body but usually around the head. If unchecked it gradually spreads becoming generalized in 4 to 8 weeks.

Scratching and rubbing induced by the intense pruritus is the first noticeable symptom. Small red spots appear followed by papules and pustules and these, ruptured by scratching, lead to formation of moist areas which continue to spread. The areas first invaded soon become dry. Yellowish-gray crusts form and gradually scale off. The hair falls out during the process. The skin becomes thickened and shows wrinkles and thick folds.

The dog gives off an offensive and characteristic odor and is repulsive in appearance. Emaciation increases, and if not treated, death occurs from cachexia and exhaustion, sometimes caused by nephritis. In some cases the skin remains dry with profuse desquamation of bran-like scales; it may be and often is mistaken for a non-parasitic condition.

Therapeutics

It is necessary to remove all the hair coat, if long. A possible exception may be made when the disease is strictly localized or in cats. Cleanse the skin and remove all scales and crusts by using an alkaline wash (sodium carbonate 2%, or soapy water) applied with a fairly stiff brush. However, indiscriminate brushing should be avoided in localized cases as it may tend to spread the disease to healthy parts of the skin.

Care must be observed in washing the cat, rabbit and ferret as they do not endure bathing very well. In some cases softening of the crusts is advisable which may be accomplished by using carbolated oil glycerin.

For dogs, even in the early stages with only small areas affected, vigorous treatment is advisable and careful repeated inspection is necessary to detect new areas. This is especially true in long haired individuals.

Most any of the parasiticides are more or less effective and failures are due as much to improper application as to the preparation used. Alcohol or aqueous preparations are convenient to apply but they are less energetic than those prepared with an oleaginous base. These will adhere to the skin longer and at the same time penetrate to the deeper layers. They should be applied generously and well rubbed in. Care should be taken to avoid irritating the conjunctiva when applying in the region of the eyes.

Application may be made immediately after cleaning the skin, and repeated daily for 4 to 6 days, followed by another thorough cleansing. The course of treatment must be continued with 3 to 4 day intermissions until itching disappears. Prevent the animal from licking the applications by muzzling or the addition of a bitter substance such as aloes.

Many remedies have been used to destroy the mites. The following give good results and are least objectionable: **Sulphur ointment** is one of the most common preparations used

for the sarcoptes mite. It gives better results when used against the sarcoptes minor of the cat and sarcoptes mutans of the chicken. A more active preparation must be used on the dog. The following mixture is recommended:

Creolini	30.0
Phenol	15.0
Sulphur flor.	60.0
Cl. terebinth	120.0
Aq. ammonii	90.0
Ol. lini	600.0
Kerosene	1200.0

M. f. Emulsio

Daily application may be made over small areas but in generalized cases only a part of the body should be treated at a time. The mixture is irritating, hence when the animal shows signs of exhaustion its use should be discontinued for a few days. Other preparations used are **balsam of Peru in alcohol (5% to 10%)**, creolin ointment, styrox ointment **(5%)**.

A NEW METHOD OF DESTROYING DOGS

The sentimentality surrounding the ordeal of killing a pet dog has always given an interest and a significance to any manual of procedure that will accomplish the object without pain.

Until now it can hardly be said that any of the classical methods are entirely without fault. Hypodermic or intrapleural injection of strychnia solutions generally cause a sudden and apparently painless death, yet there are cases in which a number of violent spasms lasting a minute or more, supervene to invite criticism. Potassium cyanide solution injected into the peritoneum or pleura cause sudden death only when the salt has not deteriorated by exposure to air, and chloroform by inhalation which is generally the method of choice of the inexperienced owner always requires the usual forcible restraint and is accompanied by struggles and whining that last for some minutes.

In Recueill de Medicine Veterinaire, October 15, 1921, Mr. Jacques Taskin, a Parisian veterinarian, after discussing the merits of all these old methods describes a new procedure that merits consideration. It is the intracardiac injection of 1cc to 2cc of chloroform. This, the author assures, will bring an instantaneous and painless death.

The procedure is described as follows: After locating the position of the heart by auscultation or palpation, which in dogs is best done on the right costal surface, the needle is passed into the heart through the intercostal space selected as the most direct route. When a drop of blood appears at the head of the needle or flows into the syringe, if already attached, the chloroform is driven in rapidly. This is followed by immediate and irremediable respiratory syncope.

The needle should be of small caliber and of a length to correspond to the size of the dog.

FALSE ESTRUM IN THE BITCH

I would like to make a few suggestions in regards to the cases of false estrum reported by M. F. W. in the September issue of VETERINARY MEDICINE. I have had a number of cases of bitches that showed estral periods after spaying and found that infection of the uterus was the cause. In one it was necessary to remove the uterus which was found to have degenerated walls cystic in character. In the other cases the trouble was of a pyogenic nature and responded to irrigations and bacterin treatment.—F. L. Ober, Duluth, Minnesota.

RANULA IN A DOG

What is the best treatment for ranula in a dog? I have incised it and cut out the upper anterior part of the cyst wall and painted it with iodin, but it has returned again.—P. L., Colorado.

REPLY: When a veterinarian tackles a case of ranula in the dog, he is beginning a real job. In all of our experiences with this disease, the condition has very often terminated just as your case did, and we have always attributed our failures to the fact that we did not dissect out the sac **entirely.**

Our successes have always been after a very careful and painstaking dissection of the entire lining of the sac, and this is generally only possible when the enlargement is not too large or too deeply imbedded under the tongue.

In other words, the operation of total extirpation is easier said than done. We have also had some success by touching up the depths of the wound two or three days after the operation with a pencil of silver nitrate.

To induce labor in a bitch that has passed the period of gestation, drive her in a vehicle over bumpy roads.—Dogdom.

HEMOPHILIA IN A SHEPHERD DOG.

A common shepherd dog, 18 months old, belonging to a farmer and utilized for the usual purposes of watching the premises was presented for treatment with an odorous emanation from the mouth and a slightly bloody froth drooling from the commissures. On examination it was found that a spicula of bone was lodged firmly between two molars. The free end of the bone extended beneath the tongue and, being pointed, produced a superficial excoriation of the lingual mucous membrane. Attempts to dislodge it with the fingers failed and caused some bleeding that was not thought important at the time. When, however, the mouth speculum was adjusted and the spicula extracted with a small molar forcep the blood flowed freely.

Twenty-four hours later the owner announced that the dog was soiling everything about the place with blood, and that the drooling of bloody saliva from the mouth was much worse. Examination at this time showed that the bone had made a wound through the gums down to the alveolar level, exposing the jaw bone and that from this wound a continuous, sheet-like stream of blood was flowing. The wound was packed with cotton wedged in the space between the teeth the bone had previously occupied.

On the third day, when the patient was returned to have the packing removed, it was seen that there was still some bleeding, which increased again when the packing was taken out.

The space was repacked to be left in place for an indefinite time to be determined by the behavior of the bleeding.

The dog was not seen again, but the owner reported that when the packing was removed about ten days later the flow of blood was worse than before, and that it had become such a nuisance from distributing blood all about the premises that it was thought best to destroy it. Was this a cancer of the jaw or hemophilia?—A. C. K., Quebec.

REPLY—The dog was too young to have suffered from cancer, and since the hemorrhage from the wound was so obstinate there is no doubt the subject was a "bleeder." Hemophilia or bleeder, as such subjects are often called, while probably more rare than in man, does occur in animals. We have seen cases in mules and at least one case in a horse.

A case was reported by Lieutenant Flieger of the French Army in Recueil de Medicine Veterinaire (Paris), October, 1921, in a horse occurring after puncture firing; and E. H. Strent, M. R. C. V. S., reports another case in a dog in The Veterinary Journal, December, 1921, in which, as in your case, the bleeding came from the gums.

The classical treatment of hemophilia consists of intraveneous injections of blood serum or in lieu of this a ten per cent solution of gelatin in water containing the physiological salt requirement. Permanent results do not generally obtain; the patients usually die.

DESIGNS MASH FEEDER FOR HENS AND PULLETS

A feeder for poultry devised to induce a heavy consumption of dry mash has been designed by D. C. Kennard of the Ohio Experiment Station.

It consists of an open, rectangular box 30 inches long, 12 inches wide and 8 inches deep, mounted on a frame 24 inches wide and 30 inches long, which is elevated 18 inches above the floor. A reel is mounted lengthwise on the feed box to prevent roosting.

Such a feeder will accomodate 50 birds; for 100 birds a four-foot feeder should be made.

It is stated that the feeder combines all qualities necessary for a feeding device, being waste-proof, roost-proof, dirt-proof and easy to make.

ENLARGEMENT OF THE CARUNCULA LACHRYMALIS IN THE DOG

I have a patient, a Boston terrier that was brought to me a few days ago for treatment. The membrane nictitans bulges out like a cyst, and is very red. Is it advisable to treat this condition or should it be extirpated? In either case, please advise me treatment or technic of operation.—S. W. H., Illinois.

REPLY: There is nothing to do for your patient but to operate.

Flood the eye with a 10 per cent solution of cocain in adrenalin chlorid 1 to 1000. After about ten minutes, pick up the little tumor-like formation with a tenaculum and cut off with scissors as close in as possible. No after treatment is required.

The eye is so extraordinarily sensitive, that the operation is an extremely painful and inhuman one, unless the anesthetic is used, and the blood supply is so great that unless adrenalin is used, there may be objectionable hemorrhage.

Queries and Answers

Botulism in Horses

I should like to know from some source why I have lost so many horses and mules. On March 28, 1915, I was called to see a mule, and on my arrival I found the animal down thrashing around and pawing with his front feet as though galloping in his spasms.

His temperature was 102. I passed a catheter and found the urine straw colored, very thick and full of white pigments; bowels dormant; tail relaxed; paralysis of hind extremities. He would eat hay, also drink water without difficulty. I warned the owner that he had forage poisoning and told him what to do; but he never changed the water or feed nor cleaned up. The blood seemed crystalized like ice.

I sent a specimen to a laboratory for examination, but received no reply as to the trouble. This mule died. I told my client he should change feed and water, but he did not do it. I also warned him of an epizootic of the disease if something was not done. In nine months to the day, another went down, and in three weeks fifteen head of horses and mules were dead. No cattle died, although they drank the same kind of water and ate the same feed. In treating these horses, during that time I tried everything known, but they all died. They were all alike as far as temperature was concerned, which ranged from 101 F. to 102.5 F. Autopsy showed nothing but a dark blood. Some lived four days and some lived seven. During this time, there were three other veterinarians who saw these cases, and all said the same.

A Second Outbreak

This outbreak was last fall, and now I have the same trouble seven miles from this ranch, all belonging to the same man, and none of these eighty head came from the first ranch. In fact, the ranch where the trouble now is, has all new buildings, corrals, water device and the best of alfalfa hay. There was also an outbreak sixteen miles north. I lost the horse that was down, but treated the other three, giving urotropin in the water, and they have never taken it.

This has occurred on low land, and also on very high land, and the water on the high land is pure mountain water. I have given arecoline in ½ grain and one grain doses (barium) chlorid, P. D. Cathartic, also Mulfords No. 3, and magnesium sulphate in maximum doses, but nothing seems to do any good. These horses were all working hard at the time they went down. I have bled some and given all the serums known since I have handled these cases. I will state further that I have a good field for experiment and if any one can give me any light on this trouble would be pleased to know.—F. A. H.

REPLY: There seems to be very little doubt about correctness of your diagnosis in these cases. The cause is for you to discover. It will be found somewhere in the food or water, very likely in the feed because water from a mountain stream is seldom ever contaminated.

A few weeks ago in pondering over the cause of an outbreak of forage poisoning wherein six horses out of a total of eighteen had died and three others were already very sick, the feed was found to be of exceptionally good quality. It consisted of a bright heavy white oats from a dry granery and would have graded number one in any market. The hay was a well-cured prairie hay, bright in color and unmixed with weeds of any kind. The water was from a very deep drilled railroad well over a thousand feet deep, pumped out continually to supply the passing locomotives day and night. Was this not a puzzle? The feed and water pure and the surroundings everything that could be desired. The horses were never fed nor watered elsewhere. When about ready to leave the riddle for some one else to solve it was rather accidently discovered that this very pure water was first pumped into a cistern that had been dry for some months before the railroad water supply was

drawn upon. True enough on inspection of the water therein it was found to be contaminated with a stinking organic material including a number of dead rodents. After watering the horses directly from the railroad well no more died. The credit of this discovery belongs to Dr. Chas. Head, of Regina, Sask., who had stubbornly refused to give up the search. This is described at some length to show that apparently safe conditions are very often deceptive.

WHITE LINIMENT FORMULA

A few months ago you published a prescription for white liniment that would not separate. I have lost that number and would thank you for the prescription.—W. R. P., Pa.

REPLY (by Dr. Quitman)—The formula and modus operandi for making a staple white liniment is as follows:

℞

Ac. oleici (U. S. P.)	℥ ij
Ammon. chloridi	℥ ij
Ol. terebinth.	
Aq. ammon. (10%)	aa ℥ j—℥ jss
Aq. qs. ad	o j

This prescription should be mixed as follows: Mix the turpentine and ammonia and shake thoroughly. Then add the oleic acid and again shake thoroughly. While it is not absolutely essential, it will insure a more staple liniment if the ingredients thus far mixed are allowed to stand for twenty-four hours before the water is added.

Whether all ingredients are mixed at once, or the twenty-four hour interval is allowed, the ammonium chlorid should be dissolved in the water, then the water added, shaking from time to time.

The ammonium chlorid is added for the purpose of creaming or thickening the liniment, and you can regulate the amount to suit yourself. However, if you add too much ammonium chlorid, the liniment will be so thick that you cannot pour it out of the bottle, and I wish to advise you that after standing a few days, it is inclined to thicken slightly as it is. It is, of course, obvious that you can make this liniment stronger or weaker by increasing the amounts of turpentine or ammonia and relatively increasing the amount of oleic acid, or decreasing the amounts, if you so desire. However, the proportions as given above make a good general purpose liniment.

THE PROCREATIVE QUALITIES OF JACKS

In May, 1920, a farmer bought a jack with a written guarantee from the seller, that the jack would get fifty percent (mule) colts from all services. The seller, himself, at the time of the sale, made a microscopic examination of the spermatozoa and found them active and alive, and the buyer also looked through the microscope and ascertained this fact.

During the season of 1921 the jack served 24 mares, but only four mares became pregnant and had colts. The result from the 1921 season is not yet determined, but the present owner knows that of three mares served, belonging to himself, not one is pregnant.

The buyer paid for the jack with his personal note, now long overdue. He wishes to return the jack, but the former owner refuses to take him back, unless a microscopic examination of the sperm now shows them to be dead. To this the present owner will not agree, as he insists that the number of colts gotten is the only dependable test, which also to me seems reasonable.

The present owner has, according to his own statement, taken reasonable good care of the jack as far as feed, housing and exercise are concerned. The jack is able to serve the mares, and according to the statement of the former owner, there is no noticeable pathological condition which would account for the jack's unfertility.

Since I may be called on the witness stand as expert witness, but can find nothing in my textbooks and journals referring to such cases, I would like you to enlighten me on the following points:

1. What chances has the present owner of returning the jack to the former owner if he takes the case to court?

2. There being no other pathological condition which would render an animal unable to serve properly, (a) is the spermatozoa test 100% accurate? (b) Is not the number of colts gotten a much more accurate test?

3. (a) Would it be necessary to determine what percentage of the mares bred this year are now pregnant? (b) and if so, is manual examination through the rectum a test that would stand in court? (c) Is there any biological test for pregnancy?

4. Is one service daily throughout the breeding season too often for a jack, stallion or bull?—O. W. J., Wash.

REPLY (By Dr. Sigler): Replying to your inquiry in regard to sale of jack will say the farmer guaranteeing 50 per cent of all mares served would be putting it too high. Sixty per cent would be putting it high for the horse for all mares served. If he had said 50 per cent of all good producing mares he would even then be putting it too high. Seldom do we see a jack that is as fertile as a stallion on mares. The coupling of the jack with mare does violence to nature and produces a sterile hybrid. Many good producing mares to stallions will not breed to jacks, although the mule is produced easier by the jack than the Hinney —the cross between the stallion and Jennet.

Guarantee Placed Too High

I think in this case the seller has placed his guarantee a little high for all mares served. You do not state the age of jack which will have some effect upon the production. It looks like the chances of the present owner of returning the jack would be good under such a guarantee. The test of spermatozoa varies. I would think it would be necessary to determine what percent of the mares bred this year are pregnant. This can be done by manual examination. One service is not too much throughout the breeding season for a jack of proper age. An aged jack can perform two services a day, one in the morning and one in the evening if properly cared for and exercised.

PERSISTENT DIARRHEA IN HORSE

I have a case of persistent diarrhea in a horse following enteritis. The feces are of a liquid to semi-solid consistency and the evacuations are more numerous than is normal.

I have tried many lines of treatment without results. The case is of several months standing. The horse has a good appetite.

Please suggest a line of treatment.—H. H. D., S. Carolina.

REPLY (by Dr. Quitman)—First, you might try arsenite of copper, which I administer in 10 grain doses three or four times daily in these cases, or in some instances, better results are obtained by the administration of 1 or 2 grain doses every one-half to one hour. This drug may be obtained in 10 grain tablets from the veterinary supply houses, or in lieu of them, or the arsenite of copper, you may prescribe arsenic trioxid in 2½ to 3 grain doses, with copper sulphate in 1 to 1½ dram doses three or four times daily. This may be administered in the animal's food. A little fenugreek or linseed meal added to it will make it more palatable for the horse.

Should this fail, I would recommend the following prescription:

℞

Ac. hydrocyanici dil
Chloroformi
Ol. menthae piperitae.....aa ʒ ss
Ol. terebinth. rectif.....ʒ j ss
Tr. capsici
Spt. camphorae
Tr. opii.....aa ʒ iij

Sig. Give two ounces in one-half to one pint starch gruel every two or three hours. Lessen the dose when improvement is marked.

BELL'S PALSY (FACIAL PARALYSIS) FROM NEGLECTED MASTOIDITIS

I have a black mare, eleven years old, brought to my stable and left for treatment showing the following symptoms: Paralysis of lower and upper lip, buccinator muscle, eye lid, and ear on left side. Discharge of a creamy pus from left ear. I inquired into the history of this mare, but the only thing I could find out was that she had had difficulty in eating for about two weeks prior to the time he brought her to me. I made an examination of her mouth and found the fourth superior molar decayed but not sore on palpation of the tooth and there was no bulging of the simsus so I concluded that the tooth was not causing the trouble.

As I had never seen a case just like this one, I called another veterinarian. After he made an examination, he said he thought she had an abscess of the ear which was causing the trouble.

I began treatment by cleaning and washing the ear out with a solution of borax, massaging the lips and cheek and the course of the seventh cranial each day with liniment and gave her 3 drams of fluid extract of nux vomica three times a day.

This mare can use her lips a little better, but the discharge is still coming from her ear and at times it seems as if the sight of her left eye is impaired.

Summary. Paralysis of ear, eye lid, upper and lower lips, buccinator muscle of left side; discharge from left ear of creamy pus and shreds of necrotic tissue at times; no bulging of simsus; no discharge from nostrils; fourth superior molar decayed but not sore; sight of left eye impaired at times; appetite good; pulse and temperature normal.

I will appreciate any comment any doctor has to offer as I never had a case like this before and perhaps some other reader of the Journal has and I would like to hear from him.—W. A. T., Ind.

REPLY—This is a very interesting case of facial paralysis, differing from the usual ones due to injury of the facial nerve where it passes over the ramus of the lower jaw.

Here the querist describes a paralysis that indicates injury at or within the stylo-mastoid foramen. The fact that there is paralysis of the ear and eye lids shows that nearly all of the extra-cranial portion of the facial nerve is involved.

The suppurative process at the ear may be a mastoiditis or it might possibly be a hidden dermoid cyst the character of which is masked by the pathological changes of the auricular region.

A positive diagnosis of the exact cause of the nervous injury would be interesting but this would be impossible without making a physical examination of the patient and with it, weigh the nervous phenomena exhibited.

Medical treatment will do no good and any surgical operation attempted must be done with strict regard for the chances of inflicting still more injury to the nerve.

CHRONIC PROFUSE PTYALISM IN A HORSE

The subject is a grey Percheron mare eight years old weighing 1,400 pounds. There is such a persistent salivation that one to two inches of saliva is found in the feed box every morning. The appetite is good and general condition is fair. She has been so affected for two years and is getting worse.

This mare was shipped to an Eastern market in March, 1920, where she contracted shipping fever. The salivation began at the onset of this attack and has continued ever since.

The teeth have been examined several times and have been pronounced normal.

I would like your opinion of the cause of the trouble and suggestions as to treatment.—D. M. K., Pennsylvania.

REPLY—Chronic ptyalism is a common enough affection of horses. Its cause has never been satisactorily explained. Freidberger and Frohner and also Hutyra and Marek without, however, making any positive statements, are inclined to attribute it to some aberration of deglutition associated with the pharynx or esophageal infundibulum. In spite of this we have never yet been able to find anything wrong with these organs, although in one case we divided the soft palate and made a good manual exploration of these organs.

Since in all of our cases the trouble supervened a more or less serious illness, or occured in old age, we have been inclined to regard the trouble as due to a lesion of the central nervous system that keeps up a stimulation of the secretory nerves.

Atropin hypodermically or a course of treatment with belladonna will give some relief but will not cure. We have had the best results with arsenic and potassium iodid.

MASTITIS

I have a case in a cow on which I would like to have some advice before going any further.

This cow calved her second calf some seven or eight days ago. She is giving her normal flow of milk from three quarters, but the other does not give much and looks to be awfully atrophied. I was called this morning and gave mastitis serum with frequent small doses of salts and an iron and strychnine tonic to be given three times daily. I also advised hot applications with frequent massage, this quarter is not hot or painful to touch, will you give me a probable cause, outcome and treatment?—R. E. C., Ga.

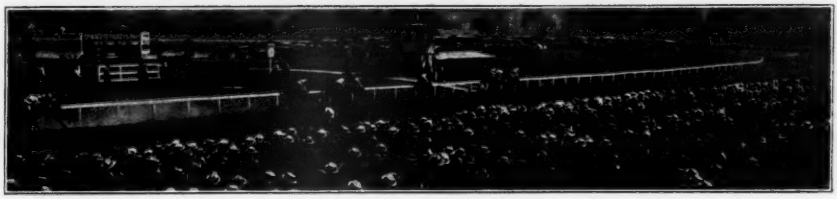
REPLY: The best method of handling such a condition is to allow the quarter to dry up for this period of lactation. In fact, in all cases of mastitis, the one best treatment is to try to suspend the secretion of milk. This always gives the parts a better opportunity to heal before the next period of lactation.

I would not advise the use of hot water or any friction other than that of rubbing the quarter with some belladonna ointment, to which camphor might be added and only milk ation. In view of the fact that you have no it out when the sinus seems to require evacuserious inflammation in this case, bacterins do not seem to be indicated.

A teaspoonful of borax three times a day for three or four days and then once a day thereafter will make a bad "heavy" horse more serviceable. Matters are improved still more if this treatment is augmented with Fowler's solution, nux vomica and stramonium.—G. G. Blank.

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE



Horse racing is an out-door sport that entertains and maintains thousands. It is an industry that develops fundimental resources—an ally of agriculture, the enterprise upon which our prosperity almost entirely depends. The horse in any of its estates is a component part of a great, big, prosperity-producing host of which the automobile is a parasite.

Infectious Abortion in the Army Brood Mares. Official Recommendation of the Bacterin Treatment

The appearance of infectious abortion among the brood mares of the army remount depots becoming a matter of serious concern to veterinary officers, has caused the Surgeon General to issue specific instructions for its control. Revised instructions for handling the disease was sent out to veterinary officers on duty at remount depots under date of October 27, 1921, as follows:

Every mare whether pregnant or not and every stallion will receive at least two series of four doses each of infectious abortion bacterin each year, the first series during the fourth and the second during the ninth month of gestation for pregnant mares. All other animals at the station are treated at the same time. Mares bred during the spring of 1921 were given the first treatment during November and the second series during the ninth month of gestation except such animals as were entering the eighth month of gestation at the date of the first treatment (November).

Mares or stallions newly purchased, irrespective of the time of the year are given the first series of treatments without delay, preferably during the prescribed quarantine period. Thereafter the new purchases receive treatment with the others.

As treatment already started is vitiated by transfer to other depots, animals thus transferred are treated anew at the new station. When an animal has received a series at one depot it need not receive another at the new station until time for routine treatment of all of the animals arrives.

Intervals and Dosage

Each series of treatment consists of four doses of increasing strength at intervals of five days as follows: 1st dose, 1cc, 2nd dose 2cc, 3rd dose 4cc and 4th dose 6cc. The bacterin is supplied by the Army Medical School, Washington, D. C., in 10cc ampules.

Careful Administration Prescribed

The administration is subcutaneous under strict antiseptic precautions. The site must be disinfected by washing with soap and water, liquor cresolis 5% and then with a coating of tincture of iodine. In view of sterile rubber gloves the hands must be properly prepared. The syringe and needle must be sterilized by boiling and the needle in addition must be immersed in alcohol after each injection. At least three syringes should be used so that two may be kept immersed in alcohol while the other is in use. The veterinary officer is held responsible for a strictly aseptic technique.

The Reaction Characteristic

The reaction described consists of an elevation of temperature, loss of appetite, accelerated intestinal activity, injected mucous mem-

branes, enfeeblement and depression and a swelling at the site of injection. These symptoms last for twenty-four to forty-eight hours causing no permanent harm to the animal's health.

When the reaction is exceptionally severe, discretion as to intervals between injections is advised. The animals must be allowed to recover from one injection before the subsequent one is given.

Provision for Serum Diagnosis

Indiscriminate sending of serum to corps area laboratories is discontinued and will only be sent when abortion from whatever cause may occur or when suspicious clinical symptoms appear. In all such cases, however, in addition to serum, specimens of vaginal discharge and fetal membranes will be sent to the laboratory, and in the case of suspects, vaginal and urethral discharges, skin lesions and lesions of mucous membranes are required.

A serum specimen of all new purchases, mares or stallions, as soon after purchase as practical is sent in every case before a series of treatment is begun.

The new purchases giving positive reactions must be considered as carriers and disposed of as unfit for breeding purposes, as it is thought not advisable to retain such animals at the present time, that is until the bacterin treatment has proved to be absolutely preventive.

A mare that has been treated, aborts and gives a positive reaction must be carefully judged because the reaction may arise from the bacterin. Such a case must be decided on its merits but a history of previous abortion should constitute grounds for suspicion, isolation and monthly laboratory tests.

Accurate Records Kept

Individual records are kept of each animal treated and of each successive treatment, noting any unusual symptoms that may appear. The reports are made to the Surgeon General on special blank forms and copies are filed at the depot. When abortion occurs in animals treated, these are reported on special blanks.

True copies of all treatment records, reports of abortions and items of importance are sent with all animals transferred from one station to another.

Study of the Complement Fixation Test by the Army Laboratories

A study of this test has shown that complement-fixing bodies remain in the blood as long as seven months after the bacterin treatment, the evidence ranging from plus-minus to complete fixation, and also that many animals that have received one or two series of treatment failed to show an evidence of fixation bodies after three months. This applies to both mares and their foals.

Many animals that have shown the presence of complement-fixing bodies three to four months after bacterin treatment were found negative after seven months. Many foals show a four-plus reaction while their dams were negative, although in many cases both mares and foals showed four-plus at the time of foaling.

The report emphasizes the fact that complement-fixing bodies can not be utilized as an index to immunity and that it is of no value except in diagnosis where bacterin treatment has not been administered.—Ext. Vet. Corps. Bulletin.

RUPTURE OF THE SPLEEN IN EQUINES

The spleen is the largest of the ductless glands. It is situated chiefly in the left epichondrium, in close relation to the left part of the great curvature of the stomach, to which its long axis corresponds. Its size and weight vary greatly in different subjects and also in the same subject under different conditions, depending chiefly on the great variability of the amount of blood contained in it. The average weight is about 35 ounces. Its length about 20 inches and its greatest width about 8 to 10 inches. It is usually bluish-red or somewhat purple in color. In natural state it is soft and yielding, but not friable.

Location Hidden

The spleen is so deeply seated and so surrounded by other organs that its diseases are not readily appreciable by physical examination and the absence of any special secretion excludes the possibility of diagnostic deductions through this channel. Even the relation of the condition of the organ to the number of the leucocytes and red globules fail to afford trustworthy indications of disease, since leucocytes originate in other tissue besides the spleen and the destruction of red globules may take place elsewhere.

Its Function Predisposes to Disease

The physiological relation of the spleen to the blood especially predisposes it to disease

in which the blood is involved. As the splenic capillaries terminate in the pulp cavities the blood poured into these spaces is delayed there and opens the way not only for the increase of leucocytes and the disintegration of red globules, but for multiplication of microorganisms which may be present in the blood and form a poisoning (local or general) with their toxins. Hence, we explain the congestion, the sanguineous engorgements and the ruptures of the spleen in certain microbion diseases.

The spleen is in a sense a safety valve for the blood of the portal vein when supplied in excess during digestion. In this way it protects the liver against sudden and dangerous engorgement, but it is itself subject to extreme alterations of vascular plentitude and relative deficiency.

This may be held to take place largely under the influence of the varying force of the blood pressure in the portal vein. It is also powerfully influenced by muscular and nervous actions.

A Rare Accident

Rupture of the spleen is not a frequent lesion in solipeds. Yet, the number of cicatrices of the spleen which are found post-mortem in old horses would indicate a considerable number of slight and non-fatal cases. The most common cause appears to be external violence, especially kicks or horn thrusts to the left hypochondriac region.

Horses running at large in pastures or in yards or standing side by side in short stables or tied with too long halters are the usual victims. In other cases, pre-existing disease of the spleen or its blood vessels have proved active factors. In the friable, degenerated spleen of leucocythaemia multiple small lacerations have been found in engorgements of the spleen consequent on thrombosis of the splenic vein in chronic indigestion with habitually loaded stomach compressing the gastric and hepatic arteries and determining a reflex of blood through the coeliac axis into the spleen. Sometimes also a traumatic accident that may be slight in itself such as falling down, rapid motion, cough, etc., may cause a rupture.

Lesions

The rupture may be on any part of the spleen and it may be complete or incomplete. In the latter even the capsule may have ruptured while the more elastic peritoneal covering has remained intact, enclosing a coagulum of variable size, bulging above the level of the spleen. When the peritoneal coat has given way, the laceration is usually smaller than that in the spleen properly enveloped. Any degeneration of the spleen will affect the appearance of the lesion. In some cases, caused by external violence, the adjacent portions of the spleen are reduced to a soft pulp. In such cases there is a slow but continuous flow of blood in a small stream which may, however, prove fatal. Again in cases caused by external violence there may be a fracture of the ribs, ecchymosis, local swelling or even wounds of the skin, but all these may be absent. The blood effused into the peritoneum is usually clotted. If the effusion has taken place slowly it is more or less coagulated around the edges of the wound or even in its depth and in this way the hemorrhage may be arrested. When the peritoneum is still intact the pressure of the clot beneath it has served to arrest the flow. In such cases the clot may be in part liquified and absorbed and in part organized into fibrous tissue, constituting the cicatrices of the spleen found in old horses.

Symptoms

Rupture of the spleen produces in general only symptoms of internal fatal hemorrhage. The cause of this can at least be suspected on account of the simultaneous colicky symptoms. The accumulation of fluid in the abdominal cavity, anemia of the mucous membranes, cold extremities, rapid failure of strength, fear, sweating, imperceptible pulse, fall of bodily temperature, dilated pupils and increased respiration. Sometimes periodically recurrent hemorrhages is noted with alternate improvement and deterioration of the general health.

The Therapy

The early mortality usually forbids treatment. When opportunity is furnished, keep the animal absolutely quiet and apply ice or other refrigeration to the left hypochondrium. Give internally tincture of neutrate of iron or other astringents and relieve any severe suffering by anadynes (hyds, cyannes, atropin, morphin, sulphate). External wounds should be treated antiseptically.

—John W. Salter, Dawson, Georgia.

The secret of curing roup in chickens is found in feeding them. Bad roupy chickens starve to death because they can not see to eat.

SUMMARY OF A REPORT ON INFECTIOUS ABORTION IN SWINE*

By J. W. Connaway, A. J. Durant and H. G. Newman

1. A specific contagious or infectious disease exists among swine which causes the majority of abortions in this species.

2. The cause is identical with or closely related to the micro-organism which causes the majority of abortions in cattle; namely, the Bacterium abortus—Bang.

3. The infection is contained in the dead aborted pigs, after-births, uterine discharges and the colostral milk of the infected sows. The organism was isolated from all these sources, and its infectiousness proven.

4. Infected sows which are apparently healthy, and farrow live pigs, also discharge

Litter of Aborted Pigs

abortion infection in the after-births and colostral milk.

5. The abortion disease can be detected in swine by the serological tests—agglutination and complement fixation—by examination of the blood-serum or the colostral milk-serum.

6. Healthy swine contract the disease by eating materials containing the abortion germs; as dead fetuses, after-births, milk, or other food contaminated with the infection. Transmission by breeding is probable but not definitely proven.

7. Non-pregnant as well as pregnant sows may contract the disease.

8. The herd boar is susceptible and may contract the disease by association with infected sows—but whether by copulation or by ingestion has not been established.

9. Suckling pigs of infected dams react to the serological tests for abortion disease. Some newborn pigs show the reaction before sucking, but the majority only after sucking.

10. The abortion germs of cattle (Bact. abortus—Bang) inoculated into pregnant swine have caused abortion, and the development of the specific blood reaction.

11. The blood serum of abortion-infected cattle reacts to the swine abortion antigen.

12. Pregnant sows, in close association with a herd of abortion-infected cattle, aborted; and the infected animals of both species reacted to the same serological test.

13. Sexually mature sows, as a rule, retain the abortion infection indefinitely; and react persistently to the serological tests.

14. Infected sows which have aborted, and continue to react, may farrow full term living pigs at the next gestation. Some, however, become either temporarialy or permanently sterile. And some farrow half developed dead fetuses with living, fully developed pigs.

15. Healthy abortion-free progeny can be reared from infected sows bred to an infected boar by isolation of the pigs after weaning to prevent reinfection.

16. Control measures. Apply the abortion test to all the mature breeding animals in the herd, and to recently purchased animals. Isolate the aborters and reactors. Disinfect thoroughly.

17. Vaccination is of doubtful value and probably detrimental.

*Bul. 187, Mo. Agr. Exp. Sta.

HEALTHY ANIMAL MEAT IS FREE FROM BACTERIA

By Drs. E. Bruge and W. Kiessig. From the Allatorvosilapok, August 31, 1921.

The authors conclude from their investigation that the healthy animal's muscle is contaminated by various bacteria not as a consequence of distribution of bacteria from the alimentary canal during lifetime as Condrady describes, but from some other sources. Special consideration should be given to the wounds made on the animal at the time of slaughtering. Through these wounds the butchers enter into the body, for the removal of blood clots (or for other reason), with their unsterile hands or fingers. The contamination is increased by section of the esophagus, partial or complete. In the jugular vein and in the anterior vena cava negative blood pressure

exists, contaminated matter around these open blood vessels from the butchers' hands, or from the severed esophagus will be drawn into the right auricle of the heart; from there into the right ventricle; into the lungs; from there back to the left side of the heart; and from the heart it will be forced into the aorta, and into the tissues of the entire animals.

Blood samples taken from healthy animals at the time of slaughtering, were found to be sterile. But blood and muscle samples taken from the same animals at intervals after slaughter showed various degrees of contamination with various kinds of bacteria. According to the authors, the contamination of healthy animals meat occurs at the time of slaughtering. This conception is supported also by the finding of various kinds of bacteria in the organs of slaughtered animals.

In judging contaminated meat, aside from the postmortem contamination (such as unsanitary handling of meat), the contamination of the meat in the animal's lifetime, that is, at the time of slaughtering, should receive more consideration.—Borsos.

SYMPTOMS AND TREATMENT OF ACUTE CARDIAC FAILURE

This article points out the tardy action of drugs in acute heart failure, stating that strophantus is the only known drug that acts promptly. Therefore, the mixture that has given us such good service may have more merit than we knew, in that the strophantus stimulates immediately, the nux vomica and digitalis coming along later, supporting and balancing the heart's action.

Drug treatment involves the personal equation, exact dosage and careful selection of drugs.

Venesection is clearly indicated when the patient is greatly cyanosed, dyspnoeic, coughing, and raising bloody sputum. There is absolutely no danger in drawing off blood at this stage, and wonderful results often follow as drugs certainly are made more effective thereby.

Aseptic ergot has been strongly recommended for subcutaneous use as a substitute for digitalis, for heart failure, but should not be used as an emergency measure.

Camphor-in-oil, also given subcutaneously, has been a favorite in the last few years, for emergency stimulation, and while it has some value, is not worthy of the confidence bestowed upon it, and ranks far below some other drugs in practical use.

Adrenalin is fleeting in action, and not dependable, and the same statement might be repeated for pituitary extract, as emergency measures.

Alcohol, while popular, is not a true circulatory stimulant, and the great faith in its ability to do the impossible, as held by the layman, is not shared by the medical profession.

Aromatic spirits of ammonia has fleeting action, is a mild stimulant, possesses irritating qualities, may have some virtue in a simple faint, but certainly does not qualify as a heart stimulant for emergency work.

Strychnine is popular, but undeservedly so, as it fails to produce results in acute cardiac failure.

Caffeine has some vasodilator properties, but acts more as a diuretic, and is not an emergency drug.

Cactus grandiflora, squill, and **sparteine sulphate** have value, and when chosen for selected cases, as for patients having idiosyncrasies for digitalis or strophanthus, or, when the cumulative effect of digitalis appears, and it becomes advisable to discontinue it for a while, cactus, or sparteine is very dependable.

Thyroid extract has been known to help heart-block, by giving sufficient amount to produce a tachycardia. This may work all right from a theoretical point of view, but not enough cases have been reported to justify an opinion.

*Ext. Boston Med. Jour.—J. F. DeVine.

TREATMENT OF MASTITIS

The treatment of mastitis in cows may be summarized as follows: (1) A good rapid purgative as early as possible. This may sometimes abort a case in the incipient stage. (2) Repeated evacuation of the milk sinus by milking gently or by syphoning out the contents. If evacuation is found impossible owing to the lumpy character of the contents these must be loosened up and dissolved by irrigation. Chlorozene is a good drug for this purpose. (3) Internal administration of formalin in 2 dram doses with a mineral oil three times a day. (4) Streptococcic mastitis bacterin treatment will help materially in many cases. (5) Support the udder with a sling when large and painful and especially when more than one quarter is affected.

Looking Backward

Many a young bull has been sacrificed to the butcher only to discover when too late that he had sired some precious offspring.

A few short years ago we preached that the serous membranes of horses had such a pyogenic susceptibility that intrusion meant death.

"We know that all chemical disinfectants interfere with the vitality of the tissues and thus retard the healing process."—W. B. Niles, Iowa State Veterinary Ass'n, 1893.

At the annual meeting of the Indiana Veterinary Medical Association of 1893 there were nine members present. Among these were Bolser, Roberts and Boor. W. L. Williams was president and J. E. Cloud was secretary.

The annual meeting of the Maryland State Veterinary Society of 1893 convened at Baltimore with seven members present. Among these were Drs. Dougherty and Clement, of which the former was president. Geo. C. Faville was the secretary.

The Michigan State Veterinary Medical Association was convened at Owosso, Michigan, on Feb. 7, 1893. There were sixteen members present, and among these were Drs. Grange, Brenton, Dunphy and Hawkins.

Two hundred years B. C., Mago, a republic of Carthage, wrote and published a library of useful information about animals and animal diseases comprising nearly thirty volumes.

The California State Veterinary Association meeting of 1893 was attended by thirteen members, among which was Drs. Archibald, Fox, Spencer and Egan. Dr. Egan was the president and Archibald was the secretary.

Stupid of Us to Forget Such Important Discoveries

In 1894 a prominent German scientist announced, through the medical press, the discovery of an antitoxin for influenza. "The serum," he says, "has a strong antitoxic power, but does not destroy the bacteria. The serum of animals so vaccinated when injected into others, imparts its qualities to them and guarantees an immunity from an infection."

Professor Walley of the Royal Dick Veterinary College, died December 10, 1894.

The passage of a veterinary examination law was engaging the attention of the Pennsylvania veterinarians in 1894, when at the semi-annual meeting of the state association the matter was seriously discussed for the first time.

The Congress of Veterinary Colleges, which afterwards developed into the Association of Faculties and Examining Boards of North America, and eventually into the Section of Veterinary Faculties of the A. V. M. A., was convened for the first time at Buffalo, N. Y., July 14, 1894. Harvard, New York, United States, Pennsylvania, McKillip and Kansas City Colleges were represented.

The annual meeting of the A. V. M. A. (then the U. S. V. M. A.) for 1893, was held in conjunction with the World's Fair Auxiliary Congresses at Chicago, Illinois. The sessions were held at the building erected for this purpose, and now the home of the Chicago Art Institute on the Lake Front. W. L. Williams was president, and the late W. H. Hoskins, the secretary. The principal subjects discussed were hog cholera, swine plague and contagious pleuro-pneumonia.

Once upon a time the veterinarians of Cleveland, Ohio, preferred charges of unprofessional conduct against a member for using an automobile in his practice, and about the same time, a teacher of a well known veterinary school on driving up to the college for the first time in a new two-lunger was greeted with jeers by the students and a professor, who on leaving the school after delivering his lecture, said, "Shame, shame, on you," and left the scene in disgust. Sure enough the veterinarians of the past generation were loyal to the cause, in distinction to those who eat butterine and drink filled milk and show no reservation in branding certain animal products as harmful, but to add insult to injury, a veterinarian recently addressed an audience on "the dog and cat as disease carriers." Can you beat it?

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTEREST OF GRADUATE VETERINARIANS

Avian Infection

Bacterial Diseases of fowls have been very prevalent the last few weeks. History of the various outbreaks has shown variable types of infection. In some localities the condition commonly termed Roup has been very much in evidence. In others, more acute infections have been reported. Some of these acute cases by complement fixation tests were proved to be true Fowl Cholera, or infection with B. Bipolaris Septicum, while in other cases this organism could not be incriminated.

The cases of so-called Roup are usually the result of a mixed infection, as are most of the other diseased conditions of fowls. Mixed Infection Vaccine (Avian) is indicated in all true bacterial diseases of fowls and has been proved a very reliable product. It must be remembered, however, that Chicken Pox and other conditions coming under the head of Contagious Epithelioma are caused by an unknown virus and all bacterial products are impotent as regards these disturbances.

Also it is advisable to look for parasites and other factors that might prove to be instrumental in predisposing birds to disease. Successful treatments are dependent on correct diagnoses.

H-G Catalogs

Numerous requests have been received during the past month for copies of our latest catalog. There have been few changes in prices as listed in the H-G catalog, issued late last spring, consequently our present catalog should be considered as the latest issued for this year.

Price changes, including instrument prices, which have been somewhat reduced, will be included from time to time in our Graduate Harmonies. Watch for the various issues and price changes.

We have quite some few Graduates on our lists who have not received our catalog; or if perchance you have misplaced the copy already sent you, a request or advice to this effect, will prompt the forwarding of same.

Internal Antisepsis in Pulmonary Infections

We have had many inquiries regarding internal medicaments for treatment or associate treatment in pulmonary infections, such as pneumonia, bronchitis, etc. In this regard an agent that contains therapeutic properties that are eliminated by way of the respiratory mucous membrane is essential. Such agents act also as intestinal antiseptics and by their elimination by way of the respiratory tract, serve a dual purpose as internal antiseptics.

For the treatment of all catarrhal affections of the respiratory and intestinal tracts, we recommend H-G Creseptol. This product by virtue of its containing such agents as Guaicol, Creosote, Oil Eucalyptus, which are known antiseptics and eliminated by way of respiratory mucous membrane, assures an antagonistic influence on the bacteria affecting these surfaces. Also by direct contact, these same agents act as antiseptics in the intestinal tract.

This product will prove to be a valuable adjunct to any treatment of infections of any character affecting the respiratory or intestinal tracts.

In order to obtain Prompt Service, may we suggest that you place your order with the nearest branch office carrying a complete stock of H-G Products:

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The Royal Serum Co.	76 N. Seminary, Galesburg, Ill.
The Royal Serum Co.	208 Observatory Bldg., Des Moines, Ia.
The Royal Serum Co.	31 W. Ohio, Indianapolis, Ind.
The Royal Serum Co.	Packers Station, Kansas City, Kan.
Illinois Veterinary Supply Co.	521 S. Water St., Peoria, Ill.
The Liberty Laboratories	Ralston, Nebr.
The Liberty Laboratories, Dr. J. S. Koen	402 E. Front St., Bloomington, Ill.
The Liberty Laboratories, Dr. J. S. Koen	Davenport, Iowa.
The Liberty Laboratories, Dr. C. R. Riordan	1535 W. 9th St., Des Moines, Ia.
The Riordan Co.	Rock Island Bldg., St. Joseph, Mo.

Matters of Current Interest

Dr. D. F. Lucky, who has recently resigned from the position of state veterinarian of Missouri, has accepted a more lucrative position with the St. Louis Live Stock Exchange.

The Jefferson City (Mo.) News, commenting on the resignation of Dr. Lucky says: "The resignation was doubtless due to politics. He is a Democrat (the villian), and for this reason must go." The parenthesized phrase is ours.

Let the Good Work Go On

The veterinarians of Southern Pennsylvania and Maryland met for the purpose of organizing the Cumberland Valley Veterinary Medical Association. Dr. B. M. Beatie of Chambersburg, Pa., was elected president, and Dr. Rohn of Waynesboro, Pa., secretary-treasurer. The first regular meeting was held at Chambersburg, January 5, 1922.

The Oregon, Washington and British Columbia associations form a strong combination, holding meetings that display "pep" and "ginger" according to reports from Secretary Cozier. The 1922 meeting will be held in Vancouver, B. C.

Lieutenant-Colonel Brocq-Rousseu who was the senior French officer of the Franco-American Veterinary Liaison Mission during the world war is now director of the Army Veterinary Laboratory at Paris. He is also president of the Alumni Association of Alfort.

Dr. Pierre Blaizot (then Lieutenant) who was junior French officer of the mission is treasurer of the association. Blaizot before the war was one of the chief practitioners of Paris with a clientele limited to the elite along the Bois de Boulogne and the environs of l'Etoile. He is now interested in biologic and therapeutic specialties for the veterinarian.

Many American officers of the veterinary and remount services retain pleasant recollections of these two cheerful veterinary officers and of their devotion to the cause of the veterinary corps of the A. E. F.

Dogs are often blamed for killing sheep that have died from disease.

To bring cheer during the long, long hours of a Northwest winter, the stork left a baby girl at the home of Dr. and Mrs. G. A. Jenne, Unity, Saskatchewan, November 21, 1921. A late report, but no less welcome.

The American Veterinary Publishing Company, South Clinton street, Chicago, Illinois, has sold out its entire stock of books and interests to Alex Eger, the well-known publisher.

Major Charles Jewell, V. C., has been transferred from the Army School for Veterinary Officers at Chicago to Governor's Island, N. Y., as chief veterinarian of the 2nd corps area.

Lieutenant Burton C. Bridges, V. C., who earned the sobriquet of General Pershing's personal veterinarian among the veterinary officers of the A. E. F., delivered an address before the Oklahoma Veterinary Medical Association at its last annual meeting on "Veterinary Interest in the American Remount Association and Remount Service."

Hog with Four Kidneys

An animal slaughtered by a butcher at Menges Mills, Pa., was found to have four kidneys, each of which was 10 inches in length but otherwise normal. The animal weighed 325 pounds dressed. The case is reported by Dr. E. S. Bausticker of York, Pa.

Dr. R. E. Wise, 45 years old, a practitioner at Hartford City, Indiana, while mentally deranged, attempted suicide by shooting himself with a shot-gun. After shooting one barrel into his body unsuccessfully he was prevented from completing the deed by his 15 year old son who wrestled the weapon from his hands after a hard scuffle.

CHAMPION

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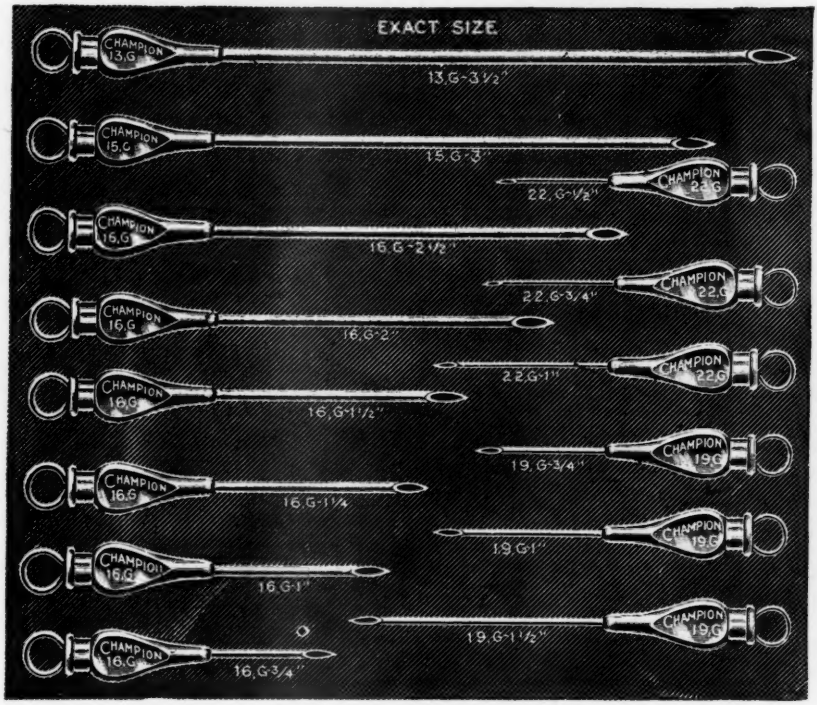

The quality of CHAMPION Needles is in keeping with CHAMPION Syringes, with which they are designed to be used. Both are the product of skilled labor, applied to the best material obtainable, with a keen appreciation of the severe demands made upon them in service.

CHAMPION Needles are made in 44 different sizes, ranging from 22 gauge ½" to 13 gauge 3½", as shown above. They range in price from $2.00 to $4.00 per dozen.

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The Hillsdale County Veterinary Medical Association of Michigan claims to be the oldest county veterinary association in the United States. The present officers are: Dr. A. Z. Nichols, president, and Dr. A. B. Curtice, secretary-treasurer.

The Kansas State Veterinary Medical Association at its eighteenth annual meeting held at Ottawa, Kansas, in January, passed a resolution condemning the sale of biologics and other veterinary remedies direct to the laity and one recommending the enactment of stringent laws against tuberculous dairy cows

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Mr. David Lee Glenn announces the marraige of his daughter, Ora Mast, to Dr. Guy Alexander Roberts, December 1, 1921, at Lavras, Minas, Brazil.

There are 460 active members belonging to the Iowa State Veterinary Medical Association. The growth of this association is one of the big achievements of the past decade.

Disease specimens, blood samples and whole parts of diseased animals, including fowls, are received at the rate of twenty-five to forty each week at the state laboratory of South Dakota. These come from farmers, county agents and others from all parts of the state for examination and diagnosis. The work is in charge of Dr. C. C. Lipp and his assistants and is done free of charge.

Dr. Lipp complains that some of these specimens are not packed according to the classical regulations. "One woman," he says, "feeling that she may have contracted tuberculosis wrote a letter to the laboratory asking for information and expectorated in the center of the sheet so that a sputum examination might be made."

Dr. George Berns of Brooklyn, who before retiring conducted one of the largest equine practices in America, demonstrates his continued interest in the veterinary profession by attending nearly all the local association meetings where his sound advice to the rising generation is much appreciated.

Dr. A. B. Carter of Attica, Indiana, suffered the loss of the index finger of his right hand from blood-poisoning sustained while vaccinating hogs.

Championship Goes to St. Paul

"In reference to the speedy work of Drs. Maxwell and Smith of Ohio, in vaccinating 351 hogs in less than two hours, we suggest that the champions come to the stockyards at South St. Paul where hogs are vaccinated with real celerity," says Marrinan of the M. & M. Serum Company of St. Paul, who reports (without a blush) that he held a split-second watch of unquestionable accuracy on Dr. H. M. Cameron while vaccinating 133 hogs weighing 120 pounds and snapped the finish at 41 minutes and 20 seconds from the word "go."

Now listen, this included both the mixed infection and simultaneous treatments, the doctor handling all three syringes himself, injecting 54 cc of serum, 3 cc of virus and 2 cc of mixed infection bacterin. Next!

Appendicitis Loses Caste

Columbus, Ind., Aug. 13—An autopsy performed on a hog which died suddenly on a farm near here disclosed that the animal died from appendicitis, according to Dr. A. A. Trotter, veterinarian.—Chicago Herald-Examiner.

According to Cough and Giltner, after an extended experimental study of Echinacea as a therapeutic agent in the diseases of animals, the big claim about the wonderful medicinal properties of this drug was "Much ado about nothing."

Since it has been proved that a milk cow excretes much more mineral matter than is contained in the usual feed, the deficiency must be met by the addition of inorganic salts to the ration or by the mineral impoverishment of its skeleton.

Dr. R. D. Wright of Maple Rapids, Mich., officiates as county veterinarian through a recent appointment, vice H. V. Kittle, resigned.

A quart of milk is equivalent in food value to 2½ pounds of bananas, 1 pint of oysters, 2 pounds and 3 ounces of potatoes, 12½ ounces of steak, 3 pounds of codfish, 9½ ounces of ham, 2 pounds of chicken, or 8 eggs, according to the computation of the Guernsey Cattle Club.

Vitamineral combines finest minerals with genuine yeast vitamine in sufficient quantity to prevent abortion, sterility, barrenness, decreased lactation, paralysis, rickets, malnutrition and kindred diseases. Prescribed only through qualified Veterinarians. Write for all facts.

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At the request of the commanding officer, Drs. D. M. Campbell and L. A. Merillat, addressed the School of Meat Inspection for veterinary officers at Chicago on December 6, on matters appertaining to the welfare and development of the veterinary corps.

Outbreak of Rabies at Rockwell City, Iowa

Four persons are under treatment for hydrophobia and a few unaccounted for rabid dogs are at liberty playing havoc among other dogs and livestock generally in that region. "As long as the outbreak was confined to animals no attempt was made to control the spread, but since the epidemic is threatening human life," says the local press, "the public officials are determined to wipe it out as soon as possible."

Dr. H. B. Treman, our estimable Iowa colleague, has instituted a vigorous campaign against the march of the epidemic among the several dogs successively bitten that promises an early control of the trouble.

The United States civil service examination for an assistant biologist qualified in bacteriology and parasitology will be held at an early date. The receipt of applications close Feb. 7, 1922.

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It has been proved specific against the lesions of Roup in chickens.

It is very effectual in controlling post-operative hemorrhage.

It dries up collar sores promptly and is par-excellence the best dressing for barb-wire cuts and similar traumitisms treated as open wounds.

Trial bottle for 75 cents. One gallon by express F. O. B. Philadelphia for $2.00. Send for booklet explaining its therapeutic uses and prices in larger quantities.

The Westmoreland Chemical & Color Company

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The annual meeting of the Maine Veterinary Medical Association was held at the Augusta House, Augusta, Maine, Wednesday, January 11, 1922.

Papers were read by Drs. A. L. Murch, M. E. Maddocks, A. J. Neal and R. P. Stanhope.

R. P. Laird, Secretary.

Dr. Geo. B. Jobson, a veterinarian of the old school, died at the age of 81 at Franklin, Pa., Dec. 16, 1921. He was born in Scotland, and emigrated to this country while still young. He was once elected mayor of Franklin, Pa., and also held the position of inspector for the state live stock sanitary board of Pennsylvania. "Although a non-graduate, he was a very useful man and a well informed veterinarian" writes one of his colleagues. Two of his sons are graduates of the Ontario Veterinary College, one of whom died shortly after graduation from an injury received in college athletics. The other son took a post graduate degree in medicine and taught for several terms at the Columbian University, Washington, D. C., and is now an eye and ear specialist at Franklin, Pa.

Dr. John O. Eyman, a non-graduate of McKeesport, Pa., died last month. It is the granting of the license of Dr. Eyman that caused so much trouble in Pennsylvania two years ago and that resulted in the resignations of Drs. Hoskins and McNeal from the Board of Veterinary Exminers.

The wife of Dr. N. Rectenwald, Cullom, Pa., died during the last month after an illness of two years. Mrs. Rectenwald was a wonderful woman, mother of fifteen children. She reared five daughters and seven sons who are all college men. Two are graduate druggists, one an attorney and four are physicians, one of whom took a veterinary degree at the University of Pennsylvania before finishing his medical course. She left thirty-three grandchildren.

Dr. X. G. May of Fort Smith, Ark., is the city milk and health inspector of that city, besides taking an active interest against the reinfestation of tick free districts in that section of the state.

The protein of milk should not only be judged by its quantity but particularly by its superior value. Milk contains enough water-soluable vitamine to meet the full requirement of the growing infant.

A Fatality From Mallein

Redmond and Charcot of France have reported a fatal termination from the use of mallein for diagnostic purposes, in a recent issue of Rucueil de Medicine Veterinarie. The horse had received an intrapalpebral injection which was followed with a subcutaneous injection for the thermic test. This was followed by the typical triple reaction: thermic, general and local. These manifestations instead of receding as usual began after the fifth day to accentuate, and death followed one week after the injection.

The autopsy revealed a vast subcutaneous edema of the whole anterior half of the body due to an extension of the local reaction. There were only two tubercule of the lungs and a few foci of bronchopneumonia to indicate glanders, in all quite insufficient to account for the death, which according to the authors, was due to the anaphylactic phenomena.

Prince Edward Island Association Meets

A meeting of the Prince Edward Island Veterinary Association was held at Charlottetown, P. E. I., on December 14, 1921.

The president, Dr. J. A. Allen, was in the chair. Vice President Dr. I. E. Croken and other officers were in their appointed places. The minutes of the last meeting were read by the secretary, Dr. W. G. Church, and after being fully discussed were finally adopted.

Dr. J. A. Allen read a paper on Dominion Registration and Co-operation of Provincial Veterinary Associations, which he had also read at the meeting of Veterinary Surgeons, held in Ottawa on Nov. 21st.

Dr. Pethick read a paper on the Accredited Herd Plan now being put into force in the Provinces of Canada by the Dominion government, how it was carried on and the benefits to be derived.

A number of other very important papers were read; one by Dr. I. E. Croken on Contageous Diseases in Live Stock on the Island and another by Dr. W. G. Church on Veterinary Hygiene.

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PHILADELPHIA

ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn.	Auburn, Ala.	March, 1922	C. A. Cary, Auburn, Ala.
American Vet. Med. Assn.	St. Louis, Mo.		N. S. Mayo, Ravenswood, Chicago.
California State V. M. A.	Davis, Cal.	Jan. 1-7, 1922	Jos. M. Arburma, Hanford, Calif.
Central Mich. Vet. Society	Jackson, Mich.	Jan. 6, 1922	W. N. Armstrong, Concord, Mich.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Conestoga Vet. Club	Lancaster, Pa.	2nd Thursday each month	H. B. Brady
Illinois S. V. M. Assn.	E. St. Louis	August, 1922	D. M. Campbell, Chicago, Ill.
Indiana V. M. Assn.	Indianapolis	Jan. 10, 11, 12, 1922	J. L. Axby, Lawrenceburg, Ind.
Iowa Vet. Assn.	DesMoines	January 17, 18, 19, 1922	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Ottawa, Kans.	January 4 and 5, 1922	I. J. Pierson, Lawrence, Kans.
Kentucky Vet. Med. Assn.	Owensboro, Ky.	Feb. 8-9, 1922	Chas. W. Fisher, Danville, Ky.
Massachusetts V. A.	Boston, Mass.	4th Wednesday of month	H. W. Pierce, West Medford, Mass.
Minnesota S. V. M. A.	St. Paul	January 12-13, 1922	C. P. Fitch, Univ. Farm, St. Paul
Mississippi S. V. M. Assn.	Gulfport, Miss.	January 23, 24, 1922	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City	Jan. 31, Feb. 1-2, 1922	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn.	Billings	July, 1922	H. Marsh, Helena
Natl. Assn. of B. A. I.	Meet with A.V.M.A	Sept. 5-9, 1922	S. J. Walkley, Milwaukee, Wis.
New York S. V. M. Soc.	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn.	Fargo	July, 1922	R. S. Amadon, Agri. Coll., N. Dak.
Northern Tier Vet. Club	Williamsport, Pa.	Feb. 9, 1922	E. B. Mayer, Canton, Pa.
Ohio St. Vet. Med. Assn.	Columbus, Ohio	February 2-3, 1922	F. J. Lambert, Columbus, Ohio.
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	January 24, 25, 1922	R. M. Staley, P. O. Box 1404, Philadelphia, Pa.
Philadelphia Vet. Club	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.	January 1-7, 1922	H. B. Winteringham, Fresno, Calif.
Southern Cal. V. M. Assn.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern States V. M. A.	Nashville, Tenn.	February 6, 7, 1922	J. I. Handley, Atlanta, Ga.
Southeastern Mich. V. M. A.	Detroit, Mich.	2nd Wednesday, January, April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.	Salt Lake City	October, each year	E. A. Bundy, Ogden
V. M. Assn. of N. Y. City	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond	January 13-14, 1922	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn.	Madison, Wis.	Jan. 18, 19, 20, 1922	O. E. Eliason, Madison
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June,	E. S. Bausticker, York, Pa.

The business of the year was brought to a close by the election of officers for the coming year as follows: President, Dr. J. A. Allen; Vice President, Dr. I. E. Croken; Secretary-Treasurer, Dr. W. G. Church; Registrar, Dr. J. T. Cosgrove; Dr. Cannon, Dr. Thompson, and The Hon. G. E. Hugs, were elected to the council.

The resolutions passed at the meeting of the representatives of the Dominion Association, held in Ottawa on the 21st day of November, 1921, were approved.—W. G. Church, Sec.-Treas.

During the period of lactation the elimination of inorganic substances in all mammals is greater than the consumption. The deficiency is felt most in cows because of the long period of lactation and the extreme capacity of the mammary secretion. These facts, always suspected, have been proven by a series of experiments by Forbes of the Ohio Experiment Station in 1920, who compared the inorganic content of the excretions of cows with that of the feed consumer.

NEBRASKA VETERINARY MEDICAL ASSOCIATION BRINGS CREDIT TO THE PROFESSION

Despite the fact that few conventions are of greater public significance than a meeting of veterinarians convened to discuss problems that intimately concern every man, woman and child of the nation, it has always been strikingly curious how little publicity they receive outside of the profession itself.

It is therefore a pleasure to reproduce verbatim, an editorial from the Daily Drovers Journal-Stockman of South Omaha, Nebraska, inspired by the meeting of the Nebraska Veterinarians in that city.

The Veterinarians

Omaha is host this week to representatives of the veterinary profession. On the program which begins today and concludes Thursday, are listed a number of men who have won national recognition in investigational work of live stock diseases. Some of the terms which these men will use may be strange to the average layman, for they will speak of bacterins, of toxins, of immunization, of botulism, of antisepsis and use other expressions which are limited to their profession.

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MONTREAL

But these men, meeting here for discussion and for consultation, are representatives of a profession which has at heart the investigation and control of diseases of live stock in this country. When one realizes that there are over two hundred millions of horses, cattle, sheep and hogs on the farms of this country having a valuation of more than six and one-half billions of dollars, the importance of the work of these men is more forcibly brought home.

Although plans for veterinary education in this country were first begun about 1855, veterinary medicine has made more rapid strides since 1884 than in any previous period of its history.

It was a veterinarian who discovered a serum for hog cholera, a discovery whose benefits affect every farmer who raises hogs. It was the investigation of veterinarians which revealed the fact of the cattle tick in the south being a carrier of the dreaded Texas fever and led the way to cleaning up infested areas. Veterinarians stand guard at our ports and inspect cattle for import and export and carry on the task of inspection in interstate live stock shipments. The work of the veterinarians has been forcibly brought home in every state where through the use of tuberculin thousands of herds are being tested in the campaign of tuberculosis eradication and the accrediting of herds.

The importance of the veterinarian in relation to diseases of the human family may be better realized when we consider that rabies, glanders, anthrax, trichinosis, tuberculosis and other diseases may be communicated from animals to man through meat products. Indeed, we often fail to take into consideration the fact that every piece of meat we purchase on the market has received the careful inspection of men who are experts in recognizing diseased tissues in any part of the animal body.

In their sessions this week the veterinarians are to discuss a number of disease problems which are of vital concern to every stockman. Through round table discussions, clinics and addresses the results of investigation will receive wide dissemination. The importance of such gatherings cannot be overestimated.

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KANSAS VETERINARIANS MEET

The eighteenth annual meeting of the Kansas Veterinary Medical Association was held at Ottawa, January 4th and 5th with headquarters at the North American Hotel.

President C. B. Kern of Beloit presided and the association was warmly welcomed in addresses by Hon. Walter Pleasant, mayor of Ottawa; F. F. Fockele, president of the Chamber of Commerce, and Thos. W. Morgan, head of the local Kiwanis Club. Dr. J. R. Zecha, who is mayor of his city, Ellinwood, Kansas, responded nicely to these welcome addresses. Dr. Kern then gave the president's annual message which was one of the best given in years, full of interest and good advice for the practitioner and profession in general.

Dr. R. R. Dykstra, Dean of the Division of Veterinary Medicine, Kansas State Agricultural College, was present and announced the Short Course in Animal Tuberculosis which is to be given at the college, February 7th, 8th, 9th and 10th, and urged a full attendance by the veterinarians of the state.

The able and interesting program which followed was characterized by the fact that it was presented almost entirely by the practicing veterinarian of the state.

Pertinent Resolutions Passed

Through its resolution committee the association went on record condemning the practice of certain commercial Veterinary supply houses having as controlling members veterinarians that are now members of recognized veterinary societies who are advertising biological and other veterinary remedies to the laity with direction for their application. Such practice being considered as violation of the code of ethics of the association.

The association also went on record favoring the enactment of stringent laws favoring the testing of all cattle from which milk is consumed in Kansas.

At the election which followed Dr. J. H. Hanna, Burlington, Kansas, was elected as president; Dr. I. J. Pierson, re-elected as secretary-treasurer; Dr. R. C. Foulk, Holton, Kansas, and Dr. A. A. Cuthbertson, Sterling, Kansas, as members of the Executive Committ. It was unamimously voted to hold the next meeting at the capital city, Topeka, January, 1923.—I. J. Pierson, Secretary-Treasurer.

Dr. R. P. Raffensperger, Bureau of Animal Industry, Chicago, addressed the Corn Growers' and Stockmen's convention held at the

Department of Agriculture, University of Illinois, January 16th to 17th, 1922.

Conference of Veterinarians at Pennsylvania

A conference of veterinarians will be held at the University of Pennsylvania Veterinary School on February 28th and March 1st. The present status of vaccines for abortion disease of bovines, diagnosis of pregnancy and treatment of sterility in the cow, hog cholera and other infectious diseases of swine, treatment of udder diseases, and other topics relating to cattle and swine will be discussed by veterinarians who are especially qualified to speak on on these subjects. All veterinarians are invited. No fees will be charged. A copy of the program will be mailed on request.

The next meeting of the Alabama Veterinary Medical Association will be held at Auburn, Alabama, February 23, 24 and 25, 1922. The examination for state and federal accredited herd testing will be held on February 25. C. A. Cary, Secretary.

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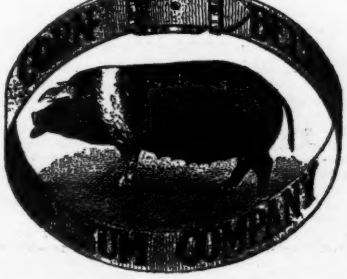

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FOR SALE—Pammel's "Manual of Poisonous Plants," at $7.50 plus postage and insurance. Publisher has found a hundred copies of this work. Address orders to: Prof. L. H. Pammel, Iowa State College, Ames, Iowa.

FOR SALE—Airdale puppies: males at $15.00, females at $10.00 Fancy breeding and dogs with size. F. M. Long, D.V.M., Doland, S. Dak.

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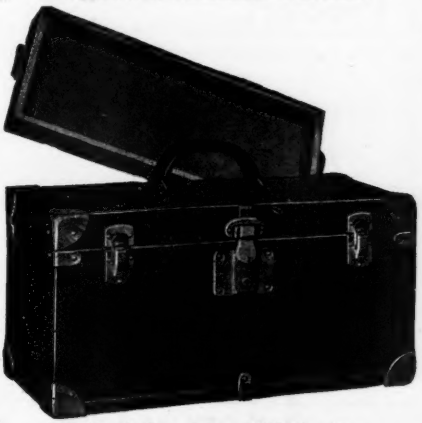

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MEETING OF THE NEW YORK CITY VETERINARY ASSOCIATION

Municipal Milk Control

The first subject on the literary program was a paper by Dr. J. Payne Lowe of Passaic, N. J., on State and Municipal Milk Control. Dr. Lowe first pointed out the many advantages of milk as a food product and stated that at the present price of milk, it is the cheapest of all the valuable foods. Aside from this, it is really an essential food during the growing period. It is particularly difficult to produce milk in a proper manner. Unfortunately, a very small percentage of the public understand and realize fully the value of milk and the difficulties surrounding its production. The speaker then reviewed the many advantages that the veterinarian has in aiding and encouraging the production of clean, wholesome milk by his training. All veterinarians should make an effort to aid the dairyman in the many problems that enter into milk production, such as breeding, housing, sanitation, etc.

Uniform Codes Desirable

Ordinances at present differ too much, and this adds to the hardships of the producer without serving any real good. Inspectors are apt to pay too little attention to the human elements entering into the production of milk. A person, innately neat and clean, is a big factor in making clean milk.

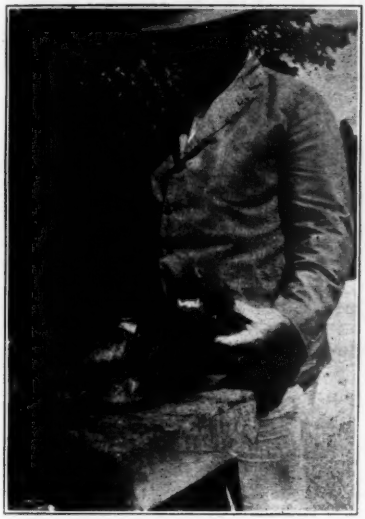
Inspectors Not Without Fault

Veterinarians, likewise, take their judgment sometimes too seriously in the examining of the lungs of cattle. Experience teaches the sensible veterinarian that to make a diagnosis of tuberculosis by auscultating and percussing the lungs, that he needs to have a pretty plain case to make a reasonably positive diagnosis of tuberculosis.

We would like to inject a word or two in here to substantiate Dr. Lowe's reasoning on this subject. It is positively painful to note how many more tuberculous cattle some whipper-snapper of an inspector can pick out by physical examination than some of us can who have had a quarter of a century of constant experience.

Osteomalacia in a Dog

A communication was read from Dr. Robert Dickson of Little Silver, N. J., describing a dog where the supermaxillary bones were so swollen as to give the face a bulging appearance. The swelling extending back into the articulation, preventing the dog from shutting his mouth. The doctor diagnosed the case as osteoporosis and destroyed the dog. He also sent with his communication some photographs.



Dr. Dickson's case of Osteoporosis

Dr. DeVine reported the U. S. Live Stock Sanitary Association meeting and the Illinois State Veterinary Medical Association meeting. Several new members were admitted to membership.

McKeller Gets Life Sentence

The election of officers was then taken up. The result was that the same faithful men who served the association last year will serve it again this year. Dr. Robert McKeller, as president, and Dr. J. E. Crawford, as secretary. It begins to look like McKeller is doomed for life. He served nine years as secretary and this is his third year as president. He and Crawford, as their names would indicate, are good safe business men. There is no danger of the treasury getting low while they are the watch dogs. In fact, they are accumulat-

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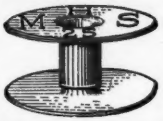

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ing so much money that it is beginning to worry some of the members how they are to spend it.

McKinney Also a Victim

But, notwithstanding this splendid situation, they insisted upon the re-election of another one of their ilk, Dr. W. J. McKinney. He has served as vice-president of the association so long that the memory of man runneth not to the contrary.

We need have no concern for this association for at least another year.—J. F. DeVine.

It is becoming evident that more attention must be given to the inorganic constituents of the cow ration and those of all animals suckling their young. The state of enfeeblement caused by unbalanced ration may prove to be a much greater cause of disease than pathogenic bacteria.

The analysis of the protein content of commercial feeds is deceptive, because it is only the available protein that counts, and this can only be determined by feeding experience. In other words, the man who feeds is a better judge than the chemist.

Country bankers and merchants always retire at night with more or less fear of safe-blowing burglars. A few dollars spent for a barking fox terrier will make their establishments almost one hundred per cent secure.

Although corn silage is not regarded as a marketable product, it is sometimes sold to neighbors and to new tenants. A fair way to make an approximate valuation is to place the price at one-third the market price of good hay. With hay at $15.00 a ton, ensilage should sell at $5.00.

The veterinary hygienist in prescribing the regemin for calves invariably omits the importance of an early access to roughage and fresh water. Tufts of selected hay and a bucket of fresh water in the calf stall no later than the eighth day should not be omitted in the ration. Roughage develops the alimentary canal, promotes early rumination and forestalls disease by strengthening the digestive tract which when weak is a veritable sponge for infections.